AMERICAN JOURNAL of VETERINARY MEDICINE

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Vol. IX MARCH, 1914 No. 3

Some Verminous Parasites of Solipeds*

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PARASITISM occurs in various degrees. Some parasites pass their entire life cycle upon their host, others visit their host only for supply of nutriment, and still others pass only a portion of their life cycle on or in their hosts, which they leave to undergo metamorphosis elsewhere.

Internal parasites of solipeds are many and the diseases they produce are a large factor in the routine practice of veterinarians in the agricultural districts of the Great Mississippi Valley.

Internal parasites injure their host by:

(a) Abstraction of nutriment.

(b) Blood suction.

(c) Production of hemolytic or irritating chemical substances.

(d) Mechanically, injury to tissue or obstruction of natural passages.

Practically all of the more important internal parasites of solipeds pass the larval and adult stage of their life-cycle in their hosts. They are, with few exceptions, oviparous, the ova being discharged in some of the body excretions. The ova hatch into the embryo, the period of incubation being variable and largely dependent upon environmental temperature. The embryo stage is usually passed on vegetation or in water although this stage of some internal parasites is still unknown. The embryo is the usual form in which the parasite is introduced into the host.

The source of parasites is a very important consideration in efficient sanitation and a knowledge of the habitat and the vitality of parasites external to their host is indispensable in controlling parasitic diseases. Practically all of the intestinal parasites under consideration in this discussion, pass some part of their life-cycle outside of their host and as a rule this portion of their life-cycle is passed in wet, marshy, improperly drained soil and especially in climates where there is no severe cold weather. The embryo of the pulmonary strongyle is said to be destroyed in a few days by water or damp soil, its longevity being favored by dryness.

The vitality of the embryo of most of the internal parasites is not definitely known, but they are known to be capable of withstanding rather intensive external environments, such as dessication and marked temperature variations. However, it is thought that they have little resistance to putrefactive changes of vegetation or the water they inhabit. Their capability of withstanding various environmental influences that are usually destructive to other forms of life further complicates the problem of con-

*Read at meeting Illinois Veterinary Medical Association, Chicago, December, 1913.

trol work. Just how long the vegetation, water or soil of a pasture or premises will remain infested after diseased animals have been removed will depend largely upon climatic conditions and upon the nature of the vegetation and soil. Under the most adverse conditions for the parasite a pasture or premises may be considered free from parasites in from six months to two years.

The usual channel of entrance of internal parasites is the digestive tube, either in food or water that has been contaminated by the discharges of infested animals or by infested land. Pulmonary infestation with the embryo of the strongyle carried upon particles of dust may occur. It is possible that some few of the internal parasites of solipeds are introduced through the skin, either directly, through open lesions, or indirectly, through the agency of some external parasite as the mosquito.

The lesions produced by parasites are quite variable. The general lesions produced by blood-sucking parasites are anemia, emaciation, and frequently edema. Local lesions of varying extent are usually also evident. The special lesions will vary according to the parasite in question; pulmonary strongyle produces bronchitis and pneumonia of a catarrhal type. The larva of the Sclerostoma equinum produces thrombosis and usually aneurismal dilations. Inflammation, degeneration and necrosis are frequently produced by a variety of intestinal parasites. Necrotic dermatitis and a number of other lesions may be produced by parasites.

The avenue of elimination of the parasite, particularly when it is in the stage or cycle in which it can exist external to the host and be capable of infesting another host, is quite important in the prevention and spread of parasitic diseases. The ova or embryos of intestinal parasites are eliminated in the intestinal excretions. The ova or embryos of pulmonary parasites are eliminated in the discharges from the lung. By proper disposal of excretions containing ova, embryos or adult parasites, the possibility of infestation will be diminished, and by the persistent proper disposal of the infested excretions, parasites can ultimately be eradicated.

The symptoms of parasitic infestation are quite variable. The general symptoms resulting from blood sucking parasites are enemia, edema, emaciation and unthriftiness. As a general rule either young animals or aged animals are more frequently affected. The specific symptoms will vary according to the nature of the parasite, the extent of infestation and the age and resistance of the infested animal. The infestation of the lungs result in pulmonary disturbances evidenced by cough, muco-purulent discharge from the nose, moist rales, and possibly solidified areas in the lung. The cough occasioned by pulmonary parasites is characterized by several expulsive efforts occurring in rapid succession. The nasal discharge is muco-purulent in character and may contain ova and disintegrated parasites which can be observed by microscopic examination. Intestinal parasites may be intensive blood suckers and deplete the animal body, as well as producing a catarrhal enteritis which may cause inappatence or a capricious appetite. There will also be parasites in some stages of development in the feces.

The diagnosis of parasitism in the animal body may or may not be difficult, depending upon the extent of infestation and upon the location in the animal body. if there are only a few invading parasites the host may appear to be normal and the diagnosis of parasitism be practically impossible. The finding of parasites in some stages of development in the excretions is positive evidence of parasitism. Thus the finding of the parasite in the nasal discharge or intestinal excretions in some of its stages of development is absolute proof of parasitic infestation of the respiratory or digestive organs. An eosinophilia evidenced by

a blood examination is additional evidence in the diagnosis of parasitism.

In prognosticating the outcome of an animal infested with parasites, the resistance and general condition of the animal, as well as the extent of infestation must always be taken into consideration. A young animal that is intensly infested with blood sucking parasites, located either in the intestine or lung, should be considered as a doubtful case. A fully developed horse in good condition, with only slight infestation, will usually recover if properly treated.

Because of the difficulties of treatment it is far better to prevent infestation than to treat animals that are infested.

Prophylaxis includes the quarantining of infested animals and the proper disposal of their discharges. It also includes the proper consideration of pasture land, hay and water supply, and the cleanliness of the barn and yards. Grass or hay from improperly drained low marshy land or farm lands that retain the drainage from infested lands should be excluded from the diet. Surface water is frequently a carrier of parasites and should be guarded against.

The curative treatment will be discussed in relation with the consideration of each parasite.

Because of the magnitude of this subject only the most important parasites will be considered.

Ascaris Megalocephala.

The round worms, or what are called the lumbricoids are quite common, particularly in animals of one to two years of age. The parasites are usually obtained by the host from water, vegetable matter, pasture land, hay, or any food stuff contaminated by dust containing the embryos. The adult lives in the small intestines. The ova are discharged from the host in the intestinal excrements. They hatch into embryos which have very great vitality. It is claimed they have persisted on vegetable matter, in infested pastures, for as much as two years.

The usual lesions produced by this parasite are catarrhal enteritis, which in extreme cases may be associated with depletion of the body and in some instances obstruction of the bile and pancreatic ducts, or the intestine itself. A few instances are on record where these parasites have perforated the mucous membrane and the entire intestinal structures, permitting infection, resulting in fatal peritonitis.

The symptoms consist of rough coat, unthriftiness, indigestion, emaciation, perianal mucous deposits, and in cases in which the hepatic and pancreatic ducts are obstructed, disturbances of the liver and pancreatic functions respectively. In a few instances there may be obstruction of the intestines sufficient to produce fatal colic.

The most common diagnostic evidence of infestation by these parasites is perianal mucous deposits and the presence of these particular parasites may be proven by the finding of the ova or the adults in the intestinal excrements.

The treatment of this condition as of other parasitic disturbances should be considered from two view points, namely, preventive and curative. The prophylactic treatment consists in preventing infestation by keeping the barns and yards clean, properly treating the manure heaps so that ova or embryo contained therein will be destroyed, keeping the animals off of the pasture lands that are known to be infested and by feeding food stuffs that are known to be free from infestation as well as giving water only from deep wells.

The curative treatment is not always successful, particularly the first attempt. Some have found that two dram doses of tartar emetic on the morning feed for three or four days followed by a brisk purgative is efficient, others have successfully used one to two dram doses of turpentine given in milk or linseed oil. Three or four dram doses of santonin has been recommended, but is rather expensive. Iron sulphate in two dram doses to which is added five or ten grains

of arsenic trioxid has been found quite efficient. Beechwood creosote given in capsules in one-half dram doses has given good results where other agents have failed.

Oxyuris Curvula and Mastigodes.

Pin worms are quite common in solipeds in this section of the country. Their life cycle is similar to that of the round worm. The embryos are obtained by solipeds in food or water and they rapidly develop into larvae and adults in the intestine. These parasites are located in the large intestine (cecum, colon and rectum.) Unless pin worms occur in large numbers they do not produce general lesions. In extreme cases of infestation there may be slight anemia and limited emaciation. They locally produce inflammation of the mucous membrane and occasionally the eggs, embryos and larvae may be found in the submucosa in the infested area, rarely they are found in the capillaries.

The diagnosis of this condition is dependent upon finding the pin worm in the fecal matter.

The most common symptoms of pin worm infestation is anal pruritis perianal mucous deposits, indigestion and, in extreme cases, colic.

The prevention of infestation by pin worms consists in eliminating food and water that are likely to be contaminated. Therapeutically we find this parasite much more difficult to control and eradicate from the host than the round worm. Enemas of quassa chips or even a dilute solution of creolin or kreso succeeded by a brisk purgative is frequently quite efficient. It is not possible, however, by this method to eradicate the parasites that inhabit the cecum and the anterior portion of the colon, and for their destruction it is necessary to use similar or the same agents that were recommended in the treatment of the round worm. It may be found necessary to prolong the treatment for the destruction of the pin worm.

Sclerastoma Equinum or Strongylus Armatus.

This is one of the most common and perhaps most destructive of all internal parasites of solipeds in this section of the country. In different areas it has been found that from one to one hundred percent of all solipeds are infested. The life cycle of this parasite varies. The ova hatch, either in the intestines or external to the host in the feces, into a small globular embryo which may live for months. The embryo inhabits water, also vegetable matter grown near ponds where the embroys hatch, and this is usually the source of infestation. After the embryos are ingested in the food or water they develop in the intestine of the host into a sexual larvae, some of which bore through the mucous membrane, becoming encysted in the submucosa; others passing through the intestinal wall and meander out into various organs and tissues, still others attack blood vessels where they cause inflammation, and later a degeneration, succeeded by a dilitation which is followed by thrombus formation. A larva usually remains in the thrombus where it develops, and later it migrates along in the vessel until it passes into the capillaries, where it perforates the tissues, and if location is favorable it enters the lumen of the intestine, where it becomes sexually mature and attaches to the mucous membrane of the intestine. Many of the larvate encysted in the submucosa also later pass into the intestine and mature.

The location of this parasite in the animal body is variable so far as the larval stage is concerned. They have been found in practically all tissues. The blood vessels most particularly invaded are the mesenteric arteries, anterior and posterior, celic axis, spermatic artery and the posterior aorta. The adult worms are found attached to the mucous membrane in the large intestine.

The lesions produced by Sclerastoma

(*Continued on page* 166.)

Protective (Defensive) Ferments and the Serodiagnosis of Pregnancy

DR. LEWIS W. FETZER

(*Continued from page 122, February issue.*)

The Dialysis Method.

THIS method depends upon the fact that placenta protein, a colloid, will not pass through a dialyzing membrane unless its molecule is broken up by a process of digestion. Consequently if we place a piece of placenta protein in a dialyzing tube or thimble (fig. I) with a proteolytic digestive ferment or the hemoglobin-free serum from a pregnant animal, cleavage products,—Bausteine (building stones) as Abderhalden terms them—result. These pass through the pores of the thimble into the surrounding fluid where they may be tested for by suitable chemical reagents, to be described later.

The apparatus and reagents necessary for conducting the test are as follows:

(a) Blood-free placenta protein (substrate).

(b) The hemoglobin-free serum from the subject under examination.

(c) Dialyzing thimble (fig. I) impermeable to protein.

(d) A wide mouthed Erlenmeyer flask (fig. I).

(e) Sterile distilled water.

(f) Toluol. (toluene).

(g) Test tubes.

(h) Bunsen gas burner or alcohol lamp.

(i) Ninhydrin reagent (triketohydrinden hydrate).

(j) Copper sulphate solution 1:500.

(k) Sodium hydrate solution 33 per cent.

(l) Boiling rods to prevent bumping and to insure uniform boiling.

(m) Pipettes.

The various steps in the test are:—

I.—The Preparation of the Placental Tissue (Protein) or Substrate.

Let us understand at the outset that the outcome of the test depends principally upon the nature of the substrate. Consequently it is necessary to pay strict attention to all of the details set down in the method. Our object then is to obtain a normal placenta protein which does not contain any blood, and furthermore, one which will not give a reaction for diffusible protein derivatives, i. e., peptones, amino acide, etc.

After having satisfied ourselves that the placenta in hand comes from an animal free of tuberculosis or other infections, or malignant disease, remove from it—while still warm with animal heat—all visible particles of blood (fibrin) and then cut away the fetal membranes and unbilical cord. The placenta is then cut into small pieces having the size of five cent pieces, and knead each piece with the fingers, on a sieve under a stream of water coming from a spigot. From time to time place the pieces of placenta on a cloth, enfold, and press them out under running water. The above processes are repeated until no visible signs of blood are discharged from the placental tissue. Finally crush the tissue in a mortar with a pestle and wash again. A snow-white preparation must result, and the process described may take as much as three hours' time. Under no circumstances is the blood, etc., removing process to be halted before completion with the intention of finishing it at a later time. The use of preservatives and (blood) decolorizing agents is barred.

Directly after washing, the placenta fragments are boiled. This is done as

follows: Drop pieces of placenta into an enameled iron pot containing about one hundred times as much boiling distilled water (by volume) as there is placenta to be boiled; then add acetic acid in the proportion of 5 drops to each liter of distilled water employed. The acid hastens the coagulation of the protein. Boil for 10 minutes and pour off the water through a sieve. The tissue remaining in the pot and on the sieve is washed for 5 minutes with distilled water and then boiled again with water but no acetic acid is added this time. The boiling process inclusive of pouring off the water and washing the tissue—is repeated about six times in succession. Another boil is now made and the boil water is tested for protein decomposition products, but here it is necessary to reduce the amount of water to about 5 times the volume of placental tissue present. The operator must be particularly careful in making the seventh boiling so as not to scorch the protein. After boiling for 5 minutes, filter some of the boiling water through a filter with a hardened tip. Five cc. of the same is placed into a sterile and otherwise clean test tube, and add 1 cc. of a 1 per cent watery solution of ninhydrin; add a boiling rod (not heated over 60 to 70°C.) and boil for one minute. In boiling it is advisable to hold the test tube in the middle of a Bunsen or alcohol flame until gas bubbles begin to ascend in the tube (from this point the time of boiling is reckoned), and after 10 to 15 seconds when lively ebullition is present, place the bottom of the test tube on the edge of the flame until the one minute has elapsed. Note the color of the fluid and set aside for one-half hour and note it again. If the color at either or both times is blue or has even a slight violet color, the substrat is not free from decomposition products, and consequently the placental tissue must be boiled and washed repeatedly until no reaction occurs.

When free of products which react with ninhydrin, the placental tissue (protein) is placed on a glass plate with a white background and each piece of tissue is scrutinized for brownish specks or other evidences of coagulated blood constituents. Abderhalden emphasizes this point strongly because it was found that the normal sera of horses and bovines was able in 40 to 50 per cent of the cases to cleave the constituents making up red blood corpuscles. The pieces not showing these defects are placed in a sterile, wide mouthed bottle, provided with a ground glass stopper, containing a little sterile distilled water and a somewhat larger amount of chloroform and toluol. The bottle is so filled that the stopper dips in the preserving fluid.

II.—Testing the Dializing Thimbles (Diffusion Shells)

Only thimbles whose pores are impervious to protein can be used for the test. Accordingly it is necessary to test each thimble in this regard with a nondiffusible protein. For this purpose entirely fresh white of egg or blood serum is used. In the case of egg white take 5 cc. of the liquid portion free from flakes and membranes in a graduated and glass stoppered cylinder, add enough sterile water to make 100 cc., and mix by shaking. Before the protein solution is placed in the thimble, soak the thimble in clean cold water for one-half hour and remove it from the bath (not with the fingers, but with a pincette,—noncorrugated tip) and drop it into a sterile wide mouthed Erdenmeyer flask. Then add with a sterile pipette 2.5 cc. of the well-mixed egg white solution. Before releasing the index finger from the pipette, be sure that the tip of the pipette is well within

(*Continued on page* 203.)

Diseases of the Respiratory Passages of Birds

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IN THE fall, winter and spring these diseases are a scourge to the poultry raiser, unless strict sanitation is observed.

Obstruction of the Trachea

This is uncommon except as a result of gape-worm infestation. Fig. 45 illustrates a case that was sent to the laboratory with the statement that it had "gapes." This bird would extend its head high into the air gasping for breath as one whose trachea is obstructed by gapeworms; it was weak and unable to stand squarely upon its feet. It was destroyed for examination. A piece of a grain of corn was found in the trachea, surrounded by an accumulation of mucus caused by the irritation its presence in the trachea had caused. The foreign body and the accumulated mucus was obstructing the passage of air to the lungs; hence the asphyxiation.

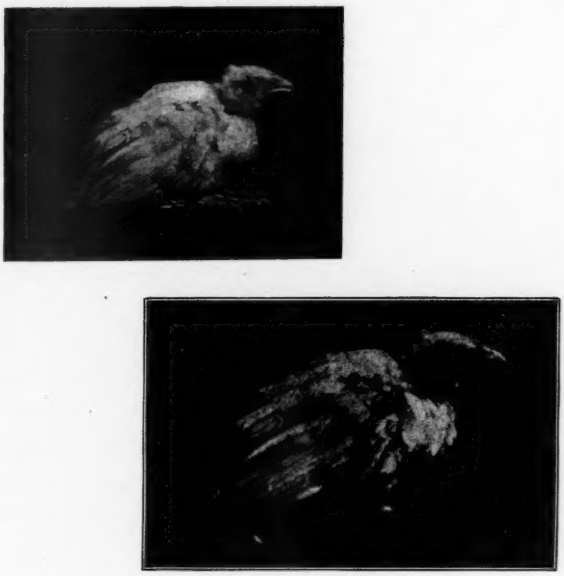


FIG. 45. OBSTRUCTION OF THE TRACHEA.
A. Showing Depression (Drooping Wings, Inability to Stand, Etc.) from Partial Asphyxiation. B. Same Chicken Shown in "A," Just Before Death.

Catarrh, Colds

Cause.—Sudden changes in the weather, cold, damp weather, roosting in draughts, and chilling by getting wet in cold rains is often a factor in the production of catarrh among birds. Such affections are more or less contagious and bad sanitation plays a part in their spread.

Symptoms.—The appetite may be somewhat diminished. The bird sneezes, throws its head and may expel some mucus. The discharge at first is watery and later becomes more or less thick (muco-purulent). The eyes may show more or less inflammation (conjunctivitis) and the eyelids may become adherent. The characteristic offensive odor of roup is absent.

Treatment.—The same treatment as outlined under roup has given us uniformly good results.

The following report of one of the experiments by Mr. Colton under the direction of the author illustrates the course and treatment of colds in birds:

With the advent of cold weather, early last fall, our chickens were taken with an epizootic of colds, which was extremely discouraging to say the least. We had over one hundred chickens, besides turkeys, and fully twenty-five percent were affected at one time. In addition to the colds which affected the throat, nostrils and eyes, many were affected with canker in the mouth. The ordinary remedies, kerosene, roup cures, etc., were all used with little effect. We finally secured from the drug store (at the suggestion of Doctor Kaupp) some sulphocarbolates compound tablets and used them, but the improvement was not very marked. Later tablets furnished by the Pathological Laboratory

of the Colorado Agricultural College (sulphocarbolates compound, thirty grains, with six grains bichloride of mercury to the tablet) were tried. This was not only placed in the drinking water, but a solution was used in a syringe to wash out the nostrils and mouth. This treatment was marvelously effective. It acted like a charm. The catarrhal condition continued, however, until the following treatment was used (also at the suggestion of Doctor Kaupp):

The nostrils were washed out with a twenty percent solution of common baking soda; then with peroxide of hydrogen and finally with the following preparation: Oil of eucalyptus twenty drops, oil of thyme one dram, and petrol oil two ounces. A warm solution of the soda was always used and the other materials were warmed by setting the bottles in hot water. This treatment was also applied to the eyes, and the ulcers in the mouth were swabbed with it. The results were remarkable. It was almost impossible to make a record of these cases, as a large portion of the flock were affected. Furthermore, it was impossible to give them all the daily treatment prescribed. Sometimes they would go several days without treatment. In mild cases, however, from two to three applications affected a cure.

March 17th we found a young cockerel in a very roupy condition, he had been hatched late in the fall and had never been very vigorous. His eyes were swollen shut, nostrils discharging badly, and, with all, his was not a promising case. We isolated him and gave him the regulation treatment as described above. Notwithstanding that it stormed severely and he was not well feathered the next day he was showing a decided improvement, and after three treatments covering about five days, all evidence of the trouble had disappeared and today he is apparently in better condition than at any time during the winter.

A day or two later we found two others belonging to the same brood in about the same condition and after one treatment there was evidence of improvement, but after a few days, not having been able to give them careful attention or regular treatment, they seemed to be worse and we used the hatchet treatment. I am satisfied, however, from our experience, both with chickens and the turkeys, when taken in time and treated regularly, it is seldom necessary to lose one. We estimated that we saved ninety-five percent of those affected, by this treatment.

Bronchitis

Cause.—In some cases we have noted catarrh commencing in the head, principally the nasal chambers, extend down and involve the trachea and even to the bronchi Sudden changes in the weather, dampness and roosting near a crack in the henhouse so that a cold wind blows upon them, or in fact in any draught, are the principal causes.

Symptoms.—A rattling sound may be heard in the region of the trachea and bronchi. The bird may be seen to gasp for air by extending the head upward. This is due to an accumulation of mucus in the air passages which partially closes the air passages, thus preventing the bird from getting enough oxygen into the lungs. The affected bird coughs, and there may be dullness and partial loss of appetite. The condition may pass off in a few days, may respond to treatment, or may last for several weeks and finally end in death. In the latter case there is marked emaciation.

Treatment.—A tablespoonful of castor oil, and, if catarrh be present, treatment as outlined under roup. Give one-grain doses quinine sulphate three times a day. Place the bird in a warm, clean, comfortable quarter, free from draughts. Give plenty of clean water and soft feed.

This is an engorgement of the blood vessels of the lungs. Congestion of the lungs is quite apt to develop into pneumonia, of which it may be said to be the first stage. It has been observed in young birds and in birds during their moulting season, when they are poorly clad with feathers and exposed to inclement weather. Young chicks that are allowed to run out in the early morning and become wet with cold dew, and chicks allowed to become wet with the cold spring rains and become chilled, are likely to suffer from congestion of the lungs and pneumonia.

A contraction of the blood vessels of the skin and periphera forces an abnormal amount of blcod to the internal organs, and congestion is the result. Improper feeding and lack of exercise are also contributing factors. Birds having this ailment will be noted to be sleepy and stupid, and to breathe rapidly. In some cases the breathing is difficult. The comb becomes bluish and the bird may die because it cannot get enough air into the lungs (asphyxiation). Upon postmortem examination the lungs will be found engorged with blood.

Pneumonia. Inflammation of the Lungs

Bronchitis as described above often terminates in pneumonia (broncho-pneumonia). It has been the experience of the writer that broncho-pneumonia following an attack of bronchitis is the commonest form of the disease. Upon opening the

bird that has died from pneumonia the affected part of the lung will be noted to be dark red, and when cut through it is liver-like in appearance and texture. Serum (yellowish fluid) and blood may exude from the surface.

The causes of pneumonia are the same as the causes of colds and bronchitis, except that the exposure is often more severe. There is also a type of pneumonia mentioned under the discussion of internal parasites that is due to a mold—usually the Aspergillus fumigatus; the condition it produces is technically known as *aspergillosis*.

Swell-Head in Young Turkeys

The most characteristic symptoms are those of swelling of certain parts of the head, especially in the region of the maxillary or infraorbital sinus which becomes filled with a gelatinous colorless substance.

These swellings may disappear in a few days or weeks or may remain for several months. In the latter instance the swelling may contain a cheesy material of foul odor, and in some cases cause death.

Treatment.—Open the swollen part and allow the morbid collection to drain out. In addition use same treatment as outlined under roup.

Chickpox—Contagious Epithelioma

This disease affects chickens, turkeys, pigeons, and geese.

Cause.—Some investigators claim that it is due to an ultra-microscopic virus (germ) and that the same germ is also the cause of avian diphtheria or roup. (An ultra-microscopic germ is one that will pass the pores of the finest filters and cannot be seen with the microscope or grown in visible quantities upon culture media.) There are just as many investigators who are certain that their results show that the germ causing these (pox and roup) are not the same and that the infection one time will not produce roup and at another chickenpox (contagious epithelioma). Our experiments do not lead us to the conclusion that they are the same disease, that is, caused by the same germ.

In structure the nodules resemble an epithelioma, described under that heading in the section on tumors and in that contagious chickenpox can be transmitted from an emulsion of the material of a pox nodule, by inoculating the face and comb of a healthy bird.

It has been proven that a maceration of the scrapings from the pox in physiological salt solution and injected subcutaneously will render immunity against further inoculation of the disease by sacrification and introduction of the virus in the face and comb.

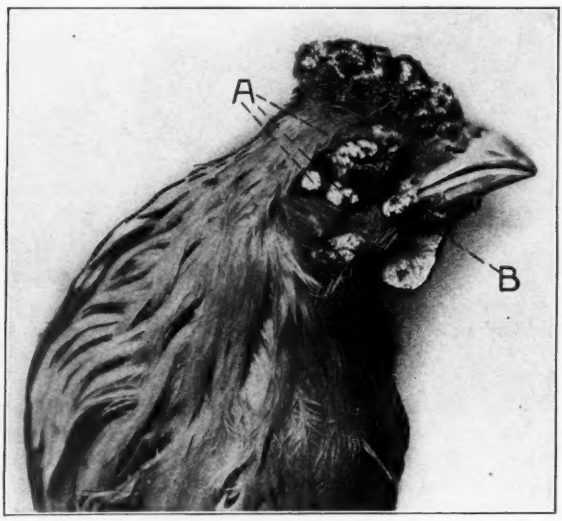


FIG. 46. CHICKEN POX.
A, Epithelial, Tumor-Like Nodules. B, an Ulcer.

One investigator has claimed that chickenpox is due to a protozoan (an animal parasite microscopic in size), but other investigators have failed to find this organism.

The disease appears as small nodules varying pin-point size up to the size of a pea or even much larger. It may be accompanied by roup, in fact, we have

studied both diseases in the same flock, an occurrence which is not uncommon. The question naturally arises, are both due to filterable viruses and are both present in the same outbreak, or are both due to the same cause? At the present time there are conflicting reports by scientific men. Fig. 46 illustrates a case of this disease.

One investigator has found that immunity against chickenpox does not confer immunity to roup.

Haring and Kofoid have shown that there is a specific antibody developed in birds affected with chickenpox. By the use of the complement-fixation method the blood from the diseased fowl exhibited fixation of the complement not shown by normal fowl blood. Thus showing that it is a specific germ disease. The antigen was prepared both from the tumors on the head and from the liver of birds sick of the disease.

Treatment.—The same sanitary regulations should be put into force as under fowl cholera. No birds should be sold from the flock while the disease exists among them. Cleaning of yards and houses and keeping them clean, as well as frequent disinfection, is essential. Antiseptics, as recommended under cholera, may be given in the feed and water. The head of the affected bird should be bathed in the antiseptic solution.

Roup. Diphtheric Roup. Swelled Head

Cause.—The cause seems to be far from settled. European investigators have claimed it due to an ultramicroscopic germ With a view of determining whether or not the type existing in Colorado is due to an ultramicroscopic organism, two sick hens were secured for experiment.

These birds had swollen eyes with an accumulation of catarrhal or inflammatory product in the maxillary sinus and a discharge from the nostrils of an offensive odor characteristic of roup. There were also the characteristic yellowish-white diphtheric membranes in the mouth. Material from all the lesions of both birds was made into a suspension with physiological salt solution and filtered through a Pasteur filter calculated to take out all germs that can be seen by aid of the microscope or grown on artificial media.

The fluid that passed through this filter was used in inoculating experimental birds. These birds were from flocks in which no roup had appeared. In all fifteen inoculations were made. Tubes of culture media were inoculated with the filtrate and incubated seventy-two hours and no growth of germs occurred on any of the tubes; this shows that all visible germs were taken out. Smears of the filtrate were made and stained and an examination of these likewise gave negative results. In none of these inoculations did roup appear. So far as this one experiment goes, it appears that our type of roup is not due to an ultramicroscopic germ. This type of roup is quite contagious.

Marx produced a yellowish-diphtheritic membrane by injecting pox emulsion into the mucous membrane of the mouth and eye of a bird.

The report of the U. S. Bureau of Animal Industry for 1910 gives records where they isolated from the ulcers in one outbreak, the bacillus necrophorus, (this is the germ that causes necrotic stomatitis in hogs, gangrenous dermatitis in horses, and many other pathologic conditions in other animals), in another outbreak the Bacillus avisepticus (the germ of fowl cholera) was found, and in still another outbreak a coccidium appeared to be the cause. The Bacillus pyocyaneus has also been isolated by another investigator as has also a short, rod-shaped germ with rounded ends called the Bacillus cacosmus. It would thus appear that several germs play a more or less part in the causation of roup. Other germs have been reported from time to time as having been associated with this disease, so that with the reports before us from scientific laboratories we cannot point, as yet, to any certain germ as the cause.

Mode of Spread.—This disease is spread by birds introduced into a flock from infected premises, and by exposure, as at poultry shows. A chronic type of the disease in one or more birds in a flock may serve to infect others when they are weakened by predisposing causes, as by exposure to cold or dampness or by roosting in a draught, or in badly ventilated buildings.

Symptoms.—There are three forms of the disease, that is, three forms of lesions. Any or all may be present in the same bird.

1. *The nasal type.*—This type is characterized at first by a thin watery discharge with an offensive odor characteristic of roup. Later the catarrhal product becomes somewhat thicker (muco-purulent) and the nostrils become occluded and quite frequently there is a bulging of the sinus in front and below the eye. This is due to an accumulation of the inflammatory products in this sinus.Fig. 47 illustrates this common swelling.

2. *The diphtheritic type.*—This type affects the mouth. This often accompanies the nasal form. Fig. 48 illustrates these diphtheritic ulcerations which are yellowish or yellowish-white in color. From these necrosing patches the disease receives its name avian diphtheria.

3. *The ocular type.*—In this form there is at first noted an inflammation of the mucous membrane lining the anterior portion of the eye ball (conjunctivitis). As the disease progresses the catarrhal product accumulates as a watery clot-like mass, whitish in color. The eyelids stick together and hold the material as it accumulates till the part bulges outward.

There is noted sneezing, shaking the head, and expulsion of mucus. There is a loss of appetite, the bird appears weak, walks unsteadily and becomes emaciated rapidly. At times, breathing is difficult and there is often a diarrhea.

Three stages then follow: catarrhal, characterized by a mucous or muco-purulent discharge; the diphtheric, affecting the mouth and throat and characterized by the formation of a membrane on the surface which may be followed later by sloughing and the conjunctival, affecting the eyes and often causing a destruction of the eyeball.

Postmortem Appearance.—The toxin from the areas of disease is very destructive, as rapid emaciation following a severe attack shows. Upon examination of the membranes that have formed in the mouth it will be found that when they are removed there is left a raw, granular appearing surface. Upon microscopic examination, cellular infiltration is seen with a destruction of cells of the mucous membrane underlying the diphtheric patch. An examination of the maxillary (suborbital) sinus will reveal it to be filled with a purulent material which is often cheesy-like in consistency. The wall over this part is very thin and can be easily opened with a knife.

A microscopic study of sections of the head, through the inflamed area (the mucous lining of the nasal passage) shows considerable thickening and an acute inflammation (invasion of polymorphonuclear leukocytes); at times the entire passage is "plugged" with the mucus.

On examination of the eye and mucous membrane surrounding the anterior portion of the eyeball there is noted a clouded condition of the cornea, the anterior portion of the ball (keratitis). There is also an acute inflammation of the mucous membrane (acute conjunctivitis).

In cases studied in this laboratory it has been found that the acute inflammation

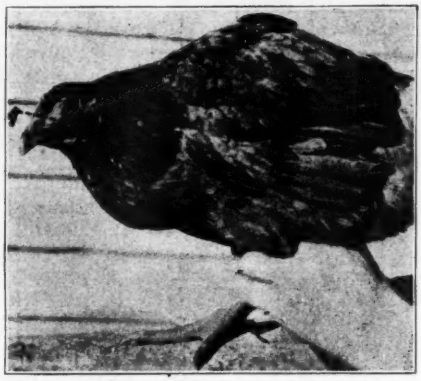


FIG. 47. ROUP IN A CHICKEN.
A, Bulging of Infraorbital or Maxillary Sinus.

extends to the iris and ciliary muscles and their surrounding structures.

Treatment.—Correct any bad sanitation or hygiene which may be a predisposing cause. The henhouse should be well ventilated, but should allow no draughts on the birds, and should be kept clean and free from dampness. It should be cleaned and disinfected daily with some of the mixtures heretofore described and recommended for this purpose. If the bird is not a valuable one, kill and cremate it, the head as well as the body.

Medicinal treatment differs with the location of the lesion. For the ulcers of diphtheric patches in the mouth, nothing is better than burning with stick silver nitrate (lunar caustic). A solution cannot be used as the fluid will run down and burn other parts of the mouth and throat.

With the thumb and finger press open the eyelids and with clean absorbent cotton remove the white catarrhal material, then apply the same remedy as for injections into the nostrils. The following has given

good results in our experimental work and with those to whom we have recommended it.

Wash out the nasal passage with a twenty-percent solution of common baking soda, using a medicine dropper or, better, a small syringe, as the material must be forced so as to pass through the nasal passage into the mouth (refer to Plate I, Nos. 29 to 33). Then inject, in like manner, peroxide of hydrogen. The soda dissolves and removes the mucus and the peroxide of hydrogen cleans out the cavity. The parts now cleansed, essential oils can be applied directly to the inflamed mucous membranes. Inject a quantity of the following:

℞

Oil of thyme	1 dram
Oil of eucalyptus	20 drops
Oil of petrol	2 ounces

In aggravated cases, repeat this treatment three times a day. Give an abundance of clean water and soft, easily digested feed.

Conjunctivitis. Inflammation of the Eye

There are many causes of inflammation of the mucous membrane of the eye, aside from the specific germs heretofore mentioned. A chick was brought to the laboratory with one eye very much swollen. Upon examination there was found a piece of straw about one-fourth of an inch in length lodged in the conjunctival sac. Upon removal of this piece of straw and the application of a one-percent solution of zinc sulphate, the inflammation subsided in the course of a day or two.

The number and variety of foreign bodies that may gain access to the eye structures and set up inflammation are numberless. In most cases their careful removal and washing the eye with a saturated solution of boracic acid or a solution of zinc sulphate and water, 1 to 100, is all the treatment that is required.

Similar washes are indicated for conjunctivitis due to injuries, spurring, pick-jng blows, etc.

Opportunities for Veterinarians in the West

By E. T. BAKER, D. V. M., Moscow, Idaho

THE leading trait of the modern young American is "wanting to be where he ain't." It is this national restlessness and discontent that fills every train and keeps the railway stations full of hurrying travelers.

A question that is being pondered over by many a veterinarian is: "Can I better my position?" To the student, about to burst from his college chrysalis into a full-fledged professional career, the query is still more vital and puzzling. Naturally, the question of location becomes paramount, and the Golden West, with its alluring possibilities and still more lurid advertisements, is thought of as a possible goal!

For the purpose of this article, the states of Montana, Idaho, Utah, Nevada, California, Oregon and Washington will be considered. These seven states constitute an area as large as fourteen states the size of Illinois, but the city of Chicago has more people than the combined population of Montana, Idaho, Utah, Nevada and Oregon! The breadth of Montana, east to west, is further than from Chicago to New York City, but one will not pass through more than four cities of any size the whole distance. The question of population is a vital one in western veterinary practice, for, if the country be sparsely settled, one of two things exists: the land is unfit for farming or stock raising, or large ranches control it. Big farms are ruinous to veterinary success, for in case an animal becomes sick, it either dies or gets well without attention.

Taking the states separately, and beginning with Montana, one finds the eastern part of this great, undeveloped state topographically resembling Illinois. The soil is a black gumbo, with a rich covering of bunch grass, which is a natural food for cattle, horses or sheep. The summers are hot, with large quantities of mosquitoes; the winters are long and cold, but pleasant. At present the opportunities are rather

poor for a veterinarian, but now is a good time to become established in some one of the new towns, and grow with them. Practitioners with enough money to tide them over for a while are the only ones who can afford to settle here, and this applies, in general, to the whole West.

In a newly settled country, the great majority of people are poor and struggling through their period of financial anemia. One may do a lot of business, but when it comes to collecting, the average veterinarian will indulge in much scalp massage, wondering how he is going to pay his own bills.

The central and western parts of Montana is more of a mining or range country, but many fertile valleys abound. Last winter a veterinary practice act was passed which will give the qualified more protection. The only way to select a suitable location is by personal observation, and one cannot bank too highly on this alone, for many a boom town is now as dead as the first case of flatulent colic to which barium chloride was administered.

Idaho has about twice the area of Ohio with about the same population as Cleveland. The upper part of the state is called "The Panhandle," and is largely devoted to mining and lumbering. In flush times a veterinarian might make good money in the mines or woods, but usually the "veterinary-in-chief" to these establishments is a hard looking customer, whose professional education has been limited to Hoyle's well-known work and to "The Police Gazette!" Some fearful and wonderful operations are attempted with an aged hoof-knife, or a pen knife, which serves to cut tobacco, pare apples, castrate colts, open abscesses and perform other aseptic manipulations. Creolin is the standard antiseptic for cuts, while aconite and whiskey (the latter sparingly used on the horse) are the standbys for "lung fever" which embraces all internal disorders not "compaction." There are some fine farming sections in this part of the state, but they are well supplied with veterinarians.

The southern part of Idaho is more on the irrigated land principle, and the great majority of the people are "Mormons." The latter are skillful farmers and are very prosperous. Last year the state legislature passed a very good practice act, which will help things in general for the graduates.

The same conditions practically prevail in Utah as found in Idaho. There are openings where a man could locate and make a fair living.

Nevada is not an agricultural state as yet. It has possibilities, however, in irrigated projects, that might bear inspection.

California is, perhaps, the most crowded state for professional men in the Union. It is a wonderful state, but, to the casual observer, is plentifully supplied with graduates.

Oregon is much like Montana—range country in the east; mountainous in the central portion, with the famous Willamette valley in the western part. It has a splendid practice act, and perhaps is the first state in the West for the protection of animals from contagious diseases. It is well supplied with graduates.

Washington is supporting her quota of veterinarians and new locations are constantly opening, but one should remember that it contains a veterinary college, and these graduates generally know of the good locations and conditions. The same may be said of California.

The automobiles have seriously hurt city practice. Ten years ago carriage and driving horses were numerous—today they are a rarity. Canine and feline practice is better in the city than ever. In the country, cattle and swine practice is soaring, and with the magnitude of the poultry industry, especially on the coast, it is unfortunate, that the veterinary profession, as a whole, have overlooked this thriving field.

In the country districts, the great proneness to "home-doctoring" is the greatest obstacle to practice. This condition came about through the fact

that twenty or thirty years ago no one but quacks existed here. These men were, unfortunately, too often the lowest types of intelligence and the rancher learned by dearly bought experience that he could treat his animals more successfully than could the so-called "vetinary." With a new era approaching, times will be better for the qualified man.

Another thing that has hurt the veterinary profession, is that many a young graduate just out of college became so hard up waiting for a call that when one did come he charged out of reason. In a few months he silently folded his grip and vanished between two days, often forgetting to pay his board bill. This made an inglorious foundation for a really honest, up-to-date veterinarian to begin to build his practice on.

Possibly, the greatest help to our profession in the West has been the type and quality of the inspectors of the Bureau of Animal Industry sent out. As a rule, they were educated, gentlemanly fellows, who raised the standard of the veterinary profession wherever they were stationed. Many of them have resigned to accept more lucrative positions or locations for practice. The prestige thus acquired has been beneficial to them.

In the past few years graduates of our best veterinary colleges have been locating in the West, and by their actions, people are beginning to realize that a qualified veterinarian is a valuable social as well as economical asset to a community. Too many towns possess, as yet, meagerly equipped men whose sole title to fame is their capacity to consume large quantities of booze. With their office in a livery stable and with an equine aroma gently arising from their raiment at all times, they do not increase respect for their so-called profession.

Sanitary science and collegiate positions are opening up many opportunities, and while they do not pay much at first, they give to a young man experience and wide acquaintanceship which he will find desirable and profitable later on.

To sum up: For the veterinarian the West contains as many advantages and as many disadvantages as any other part of our country, and one, to be successful, should be prepared to take advantage of the opportunities, and to withstand the drawbacks.

Secretary's Office of the Permanent Committee for the International Veterinary Congress

According to resolutions of the meeting of October 25th, 1912, at Lyons, the Secretary's Office of the Committee has been definitively established at THE HAGUE from the 1st of January, 1914, under the Patronage of the Dutch Department of Agriculture, Industry and Commerce.

The address of the Office is as follows:

"SECRETARY'S OFFICE OF THE PERMANENT COMMITTEE FOR THE INTERNATIONAL VETERINARY CONGRESSES AT THE HAGUE, STATIONSWEG 74 (Int. Tel. 848)."

Correspondence, printings, etc., as far as they are not sent to the President of the Committee, the Privy Councilor, DR. A. LYDTIN at BADEN-BADEN, or to the Secretary, PROF. DR. D. A. DE JONG, at LEYDEN, are immediately to be addressed to the Secretary's Office mentioned before.

The Price of Neglected Veterinary Advice on Army Horse Conservation Was Seventy-Six Million Dollars

The Black Days of the British Army Veterinary Service; the Effect; Its Lesson for Us

By GARRISON STEELE, M. D., D. V. M.

"Power to do good is the true and lawful end of aspiring, for good thoughts (though God accept them) yet towards men are little better than good dreams, except they be put in act."—Francis Bacon.

IT is my purpose in the heart of this article to bring home to the patriotic American the lesson that the history of the blackest days of the British Army Veterinary Service has for us, during this time when the veterinary profession in this country is attempting to show Congress the need for the enaction of such legislation as will prevent the occurrence in our country, and in our army, of such dismal experiences as the British had in the Boer war, as a result of neglected veterinary advice on army-horse conservation. But, before entering upon that portion of my task I desire, by way of preamble, to show that the student of American military history, in referring to the experiences of the British army, is not going out of his way to the ends of the world to seek a moral for our guidance from men in a military service entirely foreign to our own. For the American army is organized on the same lines as the British army and American military law and equity are a development from British military law.

Origin of American Military Ideals.

The tendency of the American is to boast about originality and to pretend that everything he finds about him in American governmental, institutional arrangements, military and naval organizations, and the like, originated in the fertile brain of some of his compatriots. But the well-informed American, who has studied historical antecedents and the origins of our fair heritage in law and free government, sincerely utters the words of Tennyson in Locksley Hall:

"I, the heir of all the ages, in the foremost files of time."

Five and twenty years ago American history in our schools and colleges was not studied as it is today, and there was a tendency amongst students to scoff at the suggestion that American governmental, institutional thought and law descended to us and had its origin in Great Britain. Since that time there has been a great development of historical studies. Chairs of American history have been established in the universities, and teacherships in the high schools, and that frothy, pseudo-patriotism, previously mentioned, has largely disappeared. Historians know that, in its incipiency, the continental army in the colonial days was, in its organization, copied from the British army. George Washington had fought in the British army in the Indian wars. Hence, it was but natural for the continental army to develop along the lines of the British army. This practice of admiring and imitating the British army is carried on today; for, in 1912, a law was passed by Congress uniting the Subsistence, Pay and Quartermasters Departments into one big supply corps, called the Quartermaster Corps—obviously an imitation of the British Supply Corps. British and American military law also show much the same ideals. There is a close similarity, except that a republican army must inculcate love of

country purely, as distinguished from loyalty to a personal king.

The American Army Seems to Know Nothing of the British Army Veterinary Corps.

But the American army has stopped short of adherence to British military policies of organization in its negligence of the veterinary side of the work. The British are a horse-loving people, a fox-hunting people, a nation of riders. In the British army are magnificent cavalry regiments—the Life Guards, which is a royal regiment of mounted stalwarts; the lancers, the hussars—many famous in hundreds of battlefields. The veterinary surgeon in the British army, therefore, was bound to be appreciated and to be rewarded for his skill in caring for the mounts of these crack regiments. The British army veterinarian has been able to nearly keep pace with the developments, period by period, of the increments of the British army organization. At least he has not lagged behind like the American army veterinarian has been forced to do. From the year 1776 to the year 1914 the American army veterinarian has made but two steps: he had the pay of a sergeant from the Civil War time onward to the Spanish War; and he received the footless and powerless status he now has after the Spanish-American War. The situation for the British army veterinarian has been that in some degree there has been an appreciation of his services and recognition of the profession as a profession by giving him a commission. The situation in the American army has been that of inappreciation of the services of veterinarians, negligence of the profession, eschewing the men and their work.

Reasons for Negligence in the American Army.

There are four reasons for negligence of veterinarians in the American army. From the time of the Revolutionary War up till the time of the Civil War—1776-1861—as far as can be learned, there was no such thing as a graduate veterinarian in the American army. Such treatment of animals as was attempted was done by farriers and such quacks as could be picked up for a pittance. The absence of veterinary education in this country and the ignoble horse-fanciers who leeched the army at that time, were enough to cause neglect. The second reason is that, as a corollary of the conditions just mentioned, American army officers rightly came to despise the class of men who were dabbling in drugs around the horses, and it became bred in the bone that men who had to do with horses were of necessity a low-down lot of scoundrels, unfit for the society of officers and gentlemen. The third reason is that, for many years subsequent to the Civil War, the United States army harbored much the same class of men—not a few of them non-graduates, most likely stable men who called themselves "veterinaries" and to whom was assigned the work of doctoring horses in a rough and ready sort of way. Indeed, even so late as the Philippine Insurrection (the war against Aguinaldo), there were about sixty of this class of men employed. Even today, because of the threatening conditions in Mexico, the army has picked up some of these non-graduate makeshifts to tinker with its costly mules and has even assigned them to duty alongside of graduate regimental veterinarians. This action is not in disparity with its action for one hundred and twenty-five years. It is all wrong: it is insulting to the veterinary profession; nevertheless, it is consistent with what the army has done for over a century. The fourth reason is that the War Department, up till within a very few months, has held to its prejudices against the veterinarian and in truth is ignorant of the facts regarding modern veterinary education, something with which its neighbor, the Agricultural Department, could make it acquainted in a few minutes.

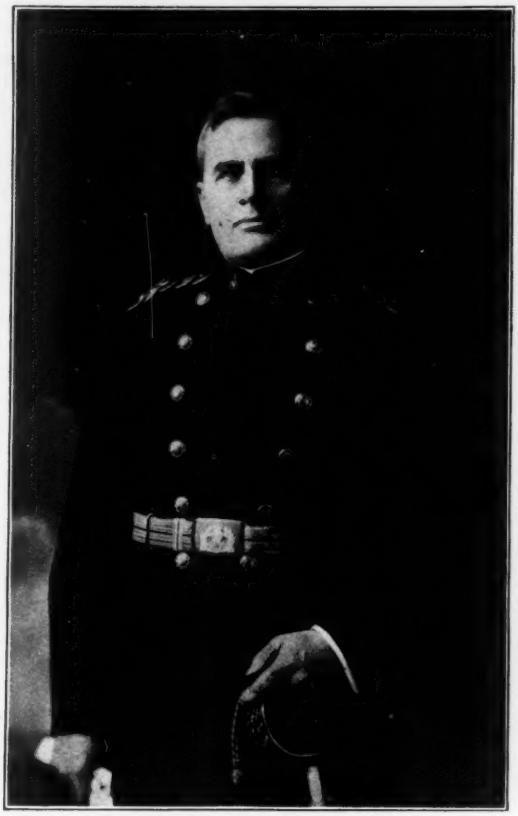
The Folly of This Negligence in the American Army.

Instead of saying that the very best veterinary advice the country could of-

fer is what must be had for the American army, it has tacitly said in the past that the poorest advice is good enough. Not only has the army but little knowledge of the advances in veterinary science; it may even be truthfully said that if this were proven to it, it would be loath to believe it, such is the rooted prejudice against the veterinarian in the army. There is further folly that, in emergency, when surely the best veterinary medical advice is needed, the army has been accustomed to fall back upon the derelicts, the ne'er-do-wells, to look after thousands of government animals. What would we think of the army, if, under the severities of a great war, it called on medical fakirs, the men who could not pass entrance examinations to a medical college, but hang up shingles in backward states as fake doctors; yes, what if such men were called upon to treat sick and wounded soldiers? First-class physicians are none too good for the army. Why should not this be true of first-class veterinarians?

A Study of the Veterinary Standing Obtained in One Army is Helpful to Other Armies.

Tracing the steps in the development of the standing of the veterinarian in the army of any one country and comparing it with another is much the same process. Each is an evolution from poor, fair, good to better and best. There is inspiration in comparative studies in the development of the military veterinary services of the different countries; though observations on the development of the army veterinary service in any one country, and the gradual hold the veterinarian obtains, is likely to be the same for it as for any other country. The struggle for advancement is the same, though the environment is different. The value of historical evidence, educed to prove the value of a veterinary service to an army, is to clinch the argument that the usefulness of the veterinarian to any army is not to be ignored. The recent publication serially in the London *Veterinary Record* of The Veterinary History of



LIEUT.-COLONEL M. A. PICHE.
Canadian Army Veterinary Corps.

The Boer War, the facts for which were taken from the British parliamentary papers, is a case at point.

The Blackest Days of the British Army Veterinary Service.

For, it was during the Boer War, at the time when the British army suffered the worst horse calamities in its history, that the blackest days in the history of

the British Army Veterinary Service occurred. There are two good reasons for referring to this experience of the British. The first is that it is certain that the horse calamities that occurred in the short space of about three years in South Africa are *the worst that ever have been placed on record in the army of a civilized nation in the history of the world.* and, therefore, we can learn something and profit by the information it gives.

CAPTAIN ANGUS W. TRACEY.
Commanding No. 4 Section Canadian Army Veterinary Corps.

Second, because of the upheaval it caused in the minds of what has sometimes been called the stolid British public, with the result that sufficient official power was given the British army veterinarians to prevent such calamities in the future. The facts to be presented are reliable and beyond dispute, as they are the product of animal vital statistics taken under orders, or from personal interest, by army veterinarians in the Boer War; they are facts brought out in the parliamentary investigation; they are from the records of the War Office; or they are from *The Times History* of the Boer War, which is semi-official.

Some Startling Facts.

The opening of the Boer War found the British Army Veterinary Service, owing to the weight of layman officialdom giving orders to it, unprepared for the struggle. "During the four years occupied in evolving the scheme for mobilizing the army, the veterinary service would appear to have been lost sight of. Other branches had advanced with the times. The medical service, for example, had many years previously been brought under one central control, and its entire powers concentrated on the work in hand instead of being frittered away in individual efforts. But it had never been generally recognized that the scheme necessary for dealing with sickness and injury among men in war was, in principle, that which was necessary for meeting casualties amongst animals. Some so-called sick depots were framed on paper and placed under the Remount Service who were thereby charged with all the duties of providing for the removal and care of the sick, while the veterinary officer's function was limited to treatment. Of trained subordinate staff he had none, and for unskilled attendants on the sick he was entirely dependent on the assistance given him by the Remount officer. Such was the mobilization arrangement for the veterinary service in 1899."

The result of the granting of this superior official authority over the veterinary service to the Remount Service, which was the horse purchasing, preparatory and distributing service of the British army, was the dominance of that service over the veterinary service and interference or meddling unresistingly with the work, properly belonging to the Army Veterinary Department. And this state of affairs, assisted by the assumption that, because the laymen of the Remount Service had superior official power they therefore had superior veterinary knowledge, though they sought not army veterinary advice on animal conservation, brought about amazing losses of horses and mules and placed

upon the British War Office an irremovable stain.

The blind ignorance, the galling officiousness, the impudent interference of the Remount Service of the British army in its relations with the Army Veterinary Department in the Boer War worked evil in two branches, namely, in the purely pathological branch of veterinary work and in the branch of veterinary hygiene, and sanitary police. In their total ignorance or wicked negligence of both branches, the offending Remount Service has been held up in the British press to the acutest criticism.

We may take up each point in turn.

In the pathological branch of veterinary science the official laymen, whose acts were ruinous to horse conservation, were amiss in their information on glanders and mange particularly. They denied that glanders existed amongst the British army horses in South Africa and found creatures among the civilians of the Cape, who called themselves veterinarians, to support them by the same statements, though no mallein tests were made. They denied that psoroptic mange was present amongst the horses, though the disease was spreading furiously amongst the itching, depressed equines everywhere, and no treatment was allowed, because certain inhabitants of Cape Colony, who were called in for opinion, said that the disease present at times was an inoffensive one sporadically and harmlessly appearing amongst the horses of the Dutch. The inevitable result followed: for when, towards the close of 1901, a clean up was ordered, Veterinary Major Blenkinsop, D. S. O., "between September and December, 1901, caused

9,000 cases of glanders,
700 cases of mange,
2,000 cases of debility, injuries, etc.,

to be destroyed in the Remount Depots and Debility Farms *of Cape Colony alone* —a total of 11,700 animals destroyed in less than four months. . . . As evidence of the mass of disease it may be mentioned that there were over 7,000 cases of mange in these depots and farms in September, and between that date and December no less than 17,000 cases of mange had been brought under treatment." This was the culmination of the ruin brought on by the ignorance of the misguided Remount Service. As the historian says, "it is the blackest veterinary page in the history of the war. It demonstrates the dangers arising from hiding away large numbers of horses without adequate supervision and inspection, and it shows the want of veterinary organization."

LIEUTENANT R. DUHAULT.
Canadian Permanent Army Veterinary Corps.
Commanding No. 5 Detachment, C. P. A. V. C., and Veterinary Officer to Lord Strathcona's Horse (Royal Canadians).

But the prevailing ignorance of the pathology of infectious and parasitic diseases was exceeded by the ignorance of animal hygiene and animal nutrition. The astonishing losses in horses and mules were largely due to starvation rations, overwork and unwillingness to take time to break in green, untried horses for the columns. During the war $76,000,000 worth of horses and mules were purchased abroad, in Hungary, South Amer-

ica and the United States, and carried to South Africa, and, if not killed or permanently injured, by war, most of them succumbed because of one of the three forms of ignorance mentioned. The practice was to land green, partly broken horses, and, without rest or training or acclimatization, despatch them at once to the front for work in the columns. The animals were over-packed, given too large a load to lug, or made to carry a man and his accoutrements, then forced forward without any attention to the necessity of rest. This was not sufficient. The animals were, throughout the war, kept on a daily starvation ration, as follows:

Horses—8 lbs. of grain, 8 lbs. of hay.

Mules—4 lbs. of grain, 8 lbs. of hay.

The horses had two pounds of grain less a day than they were allowed in peace maneuvers at home.

All this was done against veterinary advice and under veterinary protest. The animal statistics tell the rest of the story. For instance: The total number of horses and mules obtained from all sources during 1901 was:

Horses, 213,200; mules, 40,845.

These do not include the tens of thousands of horses and mules captured from the Boers. Quite apart from wastage from sickness and injury the *dead loss only* for 1901 was:

Horses, 142,603; mules, 14,433.

Taking into account the wastage by death, debilitation, sickness and injury the losses in horses and mules *every month* in 1901 were as follows:

	Monthly.
Deaths and destructions, horses	11,600
Deaths and destructions, mules	1,200
Sick, debilitated and weary	41,400
Total wastage,	54,200

Rightly it has been said, "This is truly an appalling loss, the like of which has never previously occurred in any army subsequently victorious."

The British and Canadian Army Veterinary Services Profit by the Boer War.

The cardinal defect in the British Army Veterinary Department was the need for more authority to do its work. In other words, the evils of the Boer War to horse kind came as a result of layman authority over professional work, the arrogance of these men, "superiors" only in the enormity of their officiousness and the assumption that they had knowledge and experience which in reality they did not possess. A situation of the same kind in the United States army is to be dreaded by us. Yet it is creditable to the British War Office that amends were made by the securement of authority for the veterinary force to avert like disaster in the future. In 1903 there was reform of the veterinary law by which the personnel of the Army Veterinary Department was made to consist of:

One Director-General, with rank of Major General, Army Veterinary Department, in War Office, London.

Two Colonels: Principal Veterinary Officers, on detail with General Staff and Remount Service.

Ten Lieutenant-Colonels: One in War Office, Deputy Director-General, Army Veterinary Department; six Principal Officers at Headquarters of Army Corps; three Inspecting Veterinary Officers in India.

Twenty-three Majors: 21 Inspecting Veterinary Officers in Great Britain, India, South Africa and Egypt; one, in Remount Department, War Office; one, Instructor at Army Veterinary School, Aldershot.

Forty-seven Captains: 38 at Regimental Headquarters; 6 with Remount Depots in India; 2 instructors at Army Veterinary School, Aldershot.

Sixty Lieutenants: 57 serving with regiments; 4 as Inspectors of Meats; 3 assistants in Remount Depots; 10 on probation at Aldershot.

A total of 143 veterinary officers.

The lessons learned by the British army in the Boer War became the possession of the military service of the Empire. The Canadian Army Veterinary Service, for instance, profited also by the experience of the armies of the

Motherland. The Colonies, Australia, New Zealand, Canada, sent mounted troops to the Boer War and the Canadian army learned direct lessons from its experience. Recent military law in Canada shows how the Colonials have profited by the experience. It is apropos, therefore, for us to intersperse in this article pictures of some of the Canadian veterinary officers who have done much to organize the Canadian service on a basis which would prevent such experiences as were had in South Africa.

The Lesson of the Veterinary History of the Boer War for the American Veterinary Profession.

There is a tendency in many minds to revolt at moralizing and the application of morals. A manifestation of the preacher-spirit is usually an abomination to the reader. The greatest poets, the greatest artistic writers, abstain from drawling moralizing at every step of their work. But in a discursive article like this, the conclusions for the reader must inevitably be made definite and these the writer must not fail to point out. The lesson should come home, first, to the American veterinary profession; second, to the people's representatives in Congress assembled.

The lesson for the veterinary profession is not to shrink from self-assertion, nor to falter in its demands that power be given it to prevent losses to our country and to the United States treasury in case of war, such as were sustained by Great Britain in the Boer War through neglected veterinary advice; to press upon Congress the demand that this profession be granted authority by law to prevent the calamity and the disgrace of losses in horses and mules in case of war, in any degree whatever similar to what occurred in the Boer War. We foresee that such losses and such a disgrace would be probable and we want to use our knowledge in the service of our country to avert it.

The Lesson to the People's Representatives in Congress Assembled.

Congress should know that the bill under consideration, "To Consolidate the Veterinary Service, U. S. Army, and Increase Its Efficiency," known as H. R. 4541 in the House and S. 4331 in the Senate, which the veterinary profession asks should be passed, aims to prevent wastage in public animals in the army. It is an economic measure pure and simple. We, as medical men, have knowledge of the terrible losses and depletion

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O. C. No. 2, Sect. C. A. V. C.

of the treasuries of other countries for payments for horses in case of war. We point this out to prove the necessity for the legislation for which we are asking.

In a nutshell, what we want is "power to do good" for the army and the country to be granted us by act of Congress. The profession's request is instinct with the purest patriotism. Power to do good in this line has so far been denied us. We aspire to do good. We ask to be permitted by law to act as the wisdom of experience teaches us we should act. Because, as Francis Bacon, Viscount St. Albans, wise counsellor and Lord High Chancellor of England in the reign of James I., wrote in one of his remarkable essays:

"Power to do good is the true and lawful end of aspiring, for good

thoughts (though God accept them) yet towards men are little better than good dreams, except they be put in act."

SOME VERMINOUS PARASITES OF SOLIPEDS

(*Continued from page* 148.)

equinum vary according to the extent of infestation. Anemia prevails as a result of direct abstraction of the blood by the parasite, and also as a result of hemolytic action of a chemical substance secreted by the parasite. There may also be emanciation. Locally it produces inflammation of the intestinal mucosa. The larvae produce necrosis, degeneration, aneurism, thrombosis, embolism, ischemia or hyperemia, as well as cysts, which may later undergo changes ultimately becoming fibrous cicatrices or calcified necrotic masses in the submucosa, liver, pancreas, lung or other tissue.

The general symptoms of infestation by this parasite is anemia, indigestion, colic, perianal deposits, and the elimination of the parasite in the feces. Special symptoms resulting from the lesions produced by the migrating larvae consist of circulatory disturbances in various organs such as muscle, liver, brain, intestines, kidneys, etc.

Preventative treatment consists in the feeding of non-infested food stuff and the giving of pure water, also maintaining the animals in barns and yards that are known to be free of the embryo of this parasite.

Curative treatment is efficient only in ridding the body of the adult form of this parasite, the larval form being located in the various tissues cannot be destroyed by any known medicament that would not be equally destructive to the animal tissues. The adult may be destroyed by treatment prescribed for round worms and pin worms. Any line of treatment should be persisted in for a sufficient length of time to be certain that the adults have been destroyed, and then the animal should be given a brisk purgative.

Sclerastoma Tetracanthum.

This parasite is frequently associated with the sclerastoma equinum. It prevails in practically all sections of the country. Its life cycle and method of gaining entrance to the animal body is practically identical to that of the sclerastoma equinum. Some have questioned whether or not it constitutes a separate species. The larval form of this parasite is invariably encysted in the submucosa, where, after developing into maturity it enters the intestine and attaches to the mucous membrane. Large numbers of the larvae necessarily cause damage to the intestinal wall, and large numbers of the adults damage the mucous membrane of the intestines as well as deplete the body by abstraction of blood. However, they are less damaging blood suckers and are much less dangerous to solipeds than the sclerastoma equinum.

The symptoms produced consist of unthriftiness and anemia associated with digestive derangements.

The same treatment can be used as that for the sclerastoma equinum.

Filaria Papillosa.

This parasite is more or less prevalent in solipeds throughout the entire United States. The avenue of entrance is not positively known. It is usually found meandering through the tissues in serous cavities, when in large numbers, in the peritoneal cavity. They may accumulate in sufficient numbers in the tunica vaginalis to occasion a serous inflammation characterized by an excessive outpouring of serous fluid which accumulates in the vaginal sac, producing hydrocele. Occassionally this parasite gains entrance to the aqueous humor of the eye where it occasions more or less disturbance to that organ.

The treatment in general infestation with this filaria is not successful. Cases

(*Continued on page* 202.)

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Fiftieth Annual Report of the A. V. M. A.

THE report of the Fiftieth Anniversary of the American Veterinary Medical Association held in New York last September, is now in the hands of the members. Like all of its predecessors of recent years this report is bigger and better than any that have been published before. A careful examination of the printed proceedings of the meeting reveals no errors in the account of the meeting as published in the October issue of

NOTICE

The Editorial office of the AMERICAN JOURNAL OF VETERINARY MEDICINE has been moved from 1761 Lawrence Ave., Chicago, to 1021 Davis St., Evanston, Illinois, one of the suburbs of Chicago.

Communications regarding subscriptions, advertising or any other matter concerning the journal may be addressel to Chicago or to Evanston, Ill., and will receive prompt attention.

The office of publication will remain in Chicago, but will be with the Kenfield-Leach Publishing House, 445 Plymouth Court.

VETERINARY MEDICINE but a number of additions may well be made to the report as there given.

For example, the course of instruction, as prescribed for colleges, who would remain on the accredited list of the Association, is not four years, as was generally believed it would be beginning with the college year of 1914-15, but is a course "conforming to the requirements of regulations one to nineteen, inclusive, of the Bureau of Animal Industry circular No. 150." In other words, the effort made at the Toronto meeting to increase the requirements for eligibility for membership to graduation from a four-year course, and its ratification with slight amendments at Indianapolis has been abrogated and the accredited course of instruction in accredited veterinary colleges will remain, as at present—three years.

This seems too bad. The time is certainly ripe for veterinary colleges to extend their course to four years. The number of veterinary students is now adequate to meet the increasing demand for veterinarians and the demand of the public is for ever better and better, qualified men. The veterinary profession is lagging in this respect. In other professions the course of instruction has been lengthened as fast as conditions would permit. In our profession the reverse seems to be the case. We are not willing to lengthen the course of instruction as long as conditions will permit them to remain as they are.

Beginning with the college year of 1914-15 the marticulation requirements for recognized veterinary colleges will be one year of high school work, and this will be increased to two years beginning with the college year of 1918-19. Thus some progress is made.

Of course the length of their course is optional with the veterinary colleges. They or any one of those maintaining the three-year course can change to a four-year course at any time they see fit. Great credit will be due to them if they voluntarily do it at this time, when neither the Bureau of Animal Industry, nor the American Veterinary Medical Association asks them to lengthen their present course.

Some of these schools have already prepared to extend their courses to four years on the assumption that the action of the A. V. M. A. at the Indianapolis meeting would require it.

It is probable that some of them may go the four-year course beginning with the next college year, it is possible that they may all do so. Should any take this progressive step they should receive the encouragement and support of every member of the profession who desires to see it advance.

The report of the Secretary does not show a prosperous financial condition for the Association. For example: of $8,406.00 collectable dues for the past year, only $4,170.00, or less than one-half, was actually collected. In view of this it is doubtful whether the action taken at the New York meeting to an increase of the dues from $3.00 to $5.00 a year was a wise one. It would appear that some effective means for collecting the present rate would serve the Association better than to raise the dues to $5.00, and let approximately half the members of the Association lag behind in their payment, or fail altogether.

In the report of Dr. S. H. Burnett of Ithaca, Librarian of the Association, we find a discussion of a method by which the Association can build up a library by exchanging its annual reports with other scientific societies, and also a plan for the housing of this library and its use. The plan offered although interesting, is impractical, e. g.: he proposes that when members of the Association wish to borrow books from the library, veterinarians remember and members in good standing, not

strangers, that they get "their banks or a couple of real estate owners to guarantee that they are good for the value of any book or books they may receive from the Association." It would appear that if the Association has among its members such thieves that they would steal books from the library, that it would be a good plan to give them the opportunity and thus find them out and expel them from the membership. Such a recommendation is not only unnecessary, but in bad taste and should have no place in the annual report of an official of the Association.

The Librarian reports the sale of twelve books during the year at $3.00 each, and says "We could probably sell more copies of the reports if they were widely advertised. This plan was proposed this year. It seems to me though that the extra sold would not much more than pay for the advertising, if it did so. The only profit there would be would go to the periodicals that carry the advertisement. The present method is, I believe, the better policy for the Association."

Note this. The Librarian favors storing the valuable reports of the Association in a dusty closet, where they are of no value to anyone, rather than advertise them and sell them, because the periodicals carrying the advertisement would benefit from it. Strange the way some minds work, isn't it? The average person would suppose that if certain periodicals were the means of enabling the Association to dispose of a large number of our reports at a profit, that the Librarian would be more than willing to give these periodicals a portion of the profit; but not Librarian Burnett. He would deprive the Association from any benefit from the sale of the reports, deprive veterinarians and others, not members, of the Association from any benefit from the distribution of the reports and deny the Association the valuable publicity it would receive from the distribution of these reports, all in order to avoid paying periodicals for services rendered.

"VETERINARY MEDICINE" has long insisted that the annual reports of the A. V. M. A. should be given the widest distribution possible. It has also insisted that the sale of these reports would be profitable to the Association. The cost of advertising notwithstanding, and to show Librarian Burnett that the hearts of the publishers of veterinary periodicals are on the right side, we are here and now give this Fiftieth annual report some publicity without profit, that will sell a number of copies to the profit of the Association.

Seriously speaking, the report is worth a whole lot more to any veterinarian than the price charged for it. The present report contains 1,084 pages, nearly all of it of great present interest to veterinarians engaged in practice and other lines of veterinary work. The discussions are brought right down to date and include a wide variety of subjects including: "The Diagnosis of Lameness," by Jos. Hughes; "Hock-joint Lameness," by James McDonough; "Clinical Diagnosis of Lameness, Originating Below the Fetlock," by John W. Adams, "Lameness of Hip Joint," by David W. Cochran; "Firing," by George B. McKillip; "Oophorectomy and its Importance on Small Farms," by Geo. B. Jones; "Surgical Treatment of Colics in Animals," by L. A. Merillat; "The Etiology of Roaring," by L. A. Merillat and E. Merillat; "Anesthesia," by H. E. Kingman; "Immunizing Test With Glanders Vaccine," by Mohler and Eichhorn; "Glanders and Public Drinking Fountains," by B. T. Woodward; "Apparent Inconsistencies of Biologic Diagnostics," by R. A. Archibald; "Sanitary Police Measures and Hog Cholera," by A. T. Kinsley; "Chicken Pox and Vaccination," by Hadley and Beach; Tuberculosis in

Domestic Animals," by Gilliland and Marshall; "Meat Inspection in the United States," by Thomas Castor; "Dairy Sanitation," by A. W. Tracy; "The Intradermal Tuberculin Test," by C. M. Harring; "Tuberculosis in Minnesota Pure Bred Herds," by S. H. Ward; "Diagnosis of Abortion," by Williams, Frost and Borson; "Pure Milk Production," by E. C. Schroeder; "Abdominal Wounds of Animals," by J. V. Lacroix; "Umbilical and Inguinal Hernia," by Williams and Frost; "Forage Poisoning," by A. T. Kinsley; "Thereapeutics of Parenchymatous Mastitis," by L. A. Klein; "Veterinary Posology," by H. Jensen; etc., etc. And bear in mind that a full stenographic report of the discussion of each paper is given. These discussions are by the leading men of the profession and often as valuable or more valuable than the original paper.

This entire volume of more than one thousand pages of present day veterinary information can be had for only $3.00. Orders should be sent to the Librarian, Dr. J. N. Frost, Ithaca, N. Y. Send for a copy of it on my recommendation and if you are not satisfied with it send it to me and I will refund your $3.00.

In the Report of the Committee on Diseases we find the most radical statement made during the meeting, and this from a most unexpected source —Dr. V. A. Moore of New York, from whom we quote:

I have already called attention to the enthusiast in medicine who in his eagerness to accomplish results tries to hasten nature's methods by taking short cuts to the goal. This method has usually been disastrous and not infrequently it has brought discredit upon efficient procedures. The introduction of microbiology and the theories of immunity have given occasion for the most extensive practices of this kind known to the history of medicine. I refer to vaccines and vaccine therapy. In the beginning vaccination was employed as an immunizing agent before infection had taken place and it was used to protect individuals against disease. Pasteur introduced a new feature in the immunizing process with his antirabic vaccine which could be used immediately after infection. It brought about immunity ahead of the more slowly developing disease caused by the virus. Following this, Wright and Douglass advanced the process of immunity by injecting quantities of dead bacteria from cultures made from the patient suffering with chronic infections. They explained that this rapidly acquired immunity was accomplished through the agency of the reactionary substances, or opsonins thrown off by the tissues and which accelerated phagocytosis. It is based on the very specific action of the opsonins. They prescribed a method for measuring the dose of the dead bacteria, based on the degree of ingestion of the organisms by the phagocytes. It was a carefully worked-out process based on definite findings in each individual case on which it was used and it gave promise of much good. From this fundamental discovery the medical professions, both human and veterinary, plunged into vaccine therapy for many kinds of both acute and chronic infections. More than this, the so called phylacogens came bounding to the front. The scientific methods for using dead bacteria and their adaptation to the host were cast to the four winds and indiscriminate preparations of dead bacteria, either of a single species or of many species, regardless of their source or adaptation to the case in question, were pushed upon the market. The occasional success of this method can be rationally explained, for by the laws of chance the vaccines used, accidently here and there, act in harmony with the governing forces, as one ignorant of music may now and then sound few harmonious tones. The commercialism accompanying the method of wholesale vaccination, separated from its scientific requirements, and the abandonment of a knowledge of the etiology or diagnosis of the case in hand, is one of the most pitiable spectacles ever exhibited in the practice of medicine.

I wish to be perfectly clear on this subject. I believe there is much benefit to be derived from vaccine therapy when the vaccines are made from the right cultures and properly used. There is no more delicate response to medicine than the reaction of living animal tissues to bacterial proteins; but the desired result cannot be expected unless there is accuracy in securing the culture, care in the size of the dose, and the number and frequency of the doses necessary carefully determined. Vaccine therapy, which is simply an offshoot from prophylactic vaccination, represents the acme of scientific medicine. When used properly, it has proved, in certain cases, to be of great benefit—in fact, specific in its effects; but when it is employed without regard to the

biological relation existing between the infecting organism and the tissues it cannot be considered other than quackery. It is to be hoped that indiscriminate vaccine therapy will soon be abandoned and in its place there will appear efficient methods for successfully applying the principles of immunity in therapeutics. Its possibilities are so great that I am constrained to recommend that this Association appoint a committee to investigate and to report on the subject of vaccine therapy in veterinary medicine.

It is unusual for a scientific man (and there is no question of the high scientific attainments of Doctor Moore) to claim more than he can positively demonstrate, yet here we find the doctor implying claims that are neither susceptible of proof or disproof by scientific means, but which are contradicted by a mass of clinical evidence that is simply overwhelming, i. e.: that autogenous bacterins are superior to stock bacterins.

Parts of the foregoing statement, however, are easily disproven. For example: "The scientific methods for using dead bacteria and their adaptation to the host were cast to the four winds and indiscriminate preparations of dead bacteria, either of a single species or of many species, regardless of their source or adaptation to the case in question were pushed on the market." Now, as a matter of fact, every important dealer in veterinary biologics knows the source and history of every organism that enters into his bacterins. More than this, this source and history is a matter of public record, required of these firms and kept by the Bureau of Animal Industry at Washington. Furthermore, this source is, in many cases, if not all, given on the packages in which the bacterins are marketed. As to their adaptation to the diseases for which they are required, that is perhaps a matter of opinion. It is a certainty that the veterinarians in the employ of the pharmaceutical houses believe them to be adapted to the use for which they are advertised. Their competency to decide questions of this nature we do not care to discuss. It may be said, however, that the great majority of the veterinary profession have full confidence in their ability, and that the clinical results from the use of these bacterins would indicate that this confidence is not misplaced.

The remainder of the report of the committee on diseases is sound and of great value.

In the report of the Committee on Intelligence in Education we find some very interesting reading, for example:

This committee is of the opinion that the present method of annual inspection of veterinary colleges is not in the best interests of this Association, especially as it may not promote good feeling, may not—indeed, does not—promote good feeling in all instances toward the Association. Nor is it likely to raise the prestige of the veterinary profession as well as the prestige of the veterinary colleges in the eyes of the public, and such a procedure is unprecedented so far as we know in other professional associations of a similar kind to our own.

1. A recommendation that the course in all veterinary educational institutions should be increased to four years, allowing the matriculation requirements to remain as they are for the time being, and if this recommendation is adopted, that a suggestion be made in connection therewith that all colleges establish and maintain a chair to teach such subjects as English grammar, composition, rhetoric and perhaps Latin grammar, as it has been our experience that even students possessing high-school diplomas are at times markedly deficient in these subjects.

2. A recommendation that all veterinary colleges increase their educational facilities for the teaching of sanitary science and police, which would include a more thorough training in jurisprudence, more particularly as it pertains to quarantine laws, etc.

3. A recommendation that a committee be appointed to consider and report on the question of reciprocal exchange of state licenses.

4. A recommendation that the number and length of papers and committee reports presented at the meetings of the American Veterinary Medical Association be curtailed in order that time for discussions from the floor may become available.

5. A recommendation that the American Veterinary Medical Association take steps to publish a veterinary journal along the lines followed by the American Medical Association.

Furthermore, the Committee recommends that an investigation be made to determine accurately the temperature of domestic animals, and variations among different individuals of the same species in the same individual from time to time. It is suggested that a maximum and minimum clinical thermometer be used to determine this.

Among the reports of resident secretaries some very valuable suggestions may be found.

In a report from California by Dr. David F. Fox, we find

The law providing that all veterinarians shall report all cases of contagious disease to the state veterinarian, has proved of wonderful assistance in the control of diseases, the veterinarians having co-operated to the fullest extent in complying with this law.

In the report for Colorado, by Dr. I. E. Newson, we find:

The Veterinary Division of the Colorado Agricultural College, has taken an advanced step in requiring of all those students entering hereafter, four years veterinary work before a degree can be granted. This puts this school on a par with the highest requirements in America.

and also:

The Experiment Station is undertaking the investigation of what is popularly known as "brisket disease" among cattle. For several years, it has been known at altitudes of 8,000 feet and over; it is a winter disease of chronic character; one associated with diarrhea, low fever, large collections of edematous fluid in thorax and abdomen, swelling of the brisket and cirrhosis of the liver. Some cases taken to lower altitudes are said to recover, otherwise practically all die after a lingering illness.

In the report for Delaware, by Dr. H. P. Eaves, we glean the information that:

The veterinarians of the state have organized and have formed a State Veterinary Medical Association. Several meetings have been held and I hope some improvement along these lines will result.

It seems strange to learn of state veterinary associations being formed in old states like Delaware, while the associations in newer states like those of Illinois and Michigan have already celebrated their thirtieth anniversary.

In the report for Iowa, by Dr. W. W. Dimock, we learn that:

Hemorrhagic septicemia in cattle has increased in prevalence during the last year and has caused very heavy and serious losses in many herds in the state. In the college herd several animals have died each year for the last four years from this disease, most of them dying suddenly or before assistance could be rendered, others suffered from a chronic form, yet failed to be benefited by medical treatment. In a recent outbreak among young stock at the Iowana Farms, Davenport, Iowa, several animals died that showed before death the rather typical symptoms and upon post-mortem examination revealed lesions that are considered characteristic of the disease. Several (5) calves two to six months old, showing marked symptoms of the disease, recovered, but we are not at this time prepared to say whether we should give credit to the medical agents employed or assume that they were mild cases. Twenty have been vaccinated with vaccine prepared by the Bureau of Animal Industry and no further cases have been developed, but it is not yet time to draw conclusions.

This report also contained a discussion of the diseases of poultry, which is of more than ordinary interest because of the importance that poultry pathology has assumed to veterinarians recently. Concerning this matter Doctor Dimock says:

We have obtained some very gratifying results from the vaccination for roup. The vaccine used was prepared from organisms isolated from raw surfaces beneath the necrotic membranes in the mouth. Two different forms of micrococci and a sarcina, but no bacilli, were used. The vaccine was standardized to one billion per cc., and one-tenth cc. was the amount administered. Two hundred and eight fowls were vaccinated, about one-half of which were sick at time of vaccination. Previous to this time thirty-five fowls had died and following the vaccination only seven died.

Diarrhea in young chicks has been reported to us from every section of the state. We have made no extensive studies, but from the history and symptoms and superficial laboratory examinations, suspect the existence of three forms of diarrhea, viz., intestinal coccidiosis, that form due to the *Bacillus pullorum*, and non-specific form due to improper feeding and care.

Chicken cholera and allied diseases which we have not positively diagnosed are with us the year round and cause serious losses.

The report for Missouri by Dr. F. F. Brown contains some important information regarding the campaign being waged against tuberculosis in that state and the success that has attended the employment of the intradermal tuberculin test, which is official in Missouri and the only one used by the state.

The report also states that the prevalence of glanders in Missouri decreased nearly fifty per cent from its former prevalence during the past year. The abolition of open watering troughs is considered as responsible for the all but suppression of the diseases in Kansas City.

In the report for Montana, by Dr. A. H. Cheney, we learn that:

Some few years back, Dr. M. E. Knowles experimentally inoculated some twenty-five coyotes with scabies, setting them free in several localities of eastern Montana in hopes that he might succeed in lessening their number, if not exterminating them. The doctor's highest hopes have been more than gratified. Dealers in hides and pelts report that from 25 to 90 per cent of Coyote skins show infection to some degree. Range riders frequently report seeing dead coyotes badly infected with scables that have sought shelter in some vacant cabin or haystack. They become so emaciated that the ranch boys frequently kill them with a pitchfork or such weapon. Just recently, the State Sheep Commission in conjunction with the State veterinarian, have taken steps to establish a "coyote farm," placing Dr. M. E. Knowles in charge, for the purpose of further pursuing these inoculations. Such measures we deem wise for all states to establish where these animals are at all numerous.

The following information concerning the prevalence of dourine in Montana is interesting.

Dourine: We are sorry to report that dourine is within our state, three counties now being in the infected area. We would feel very much gratified if this disease could be kept within the present infected area. However, permit us to apprise you of the possibilities of this disease being present within your own state. How long it has been with us we do not know, or whence it came we know not. The federal authorities, with Dr. A. W. Miller in charge, are giving us most liberal and efficient assistance in stamping out the disease. Dr. Mohler's complement-fixation test is certainly a "friend in need"; without its aid only a very small per cent would be detected or even suspicioned. Up to the present time several hundred cases have been found. The stallions are being castrated and the mares destroyed.

In the report for Oregon by W. Dean Wright, we find the following encouraging report on the possible suppression of rabies, through muzzling regulations:

During the summer an epizootic of rabies obtained in Portland and vicinity and threatened to become uncontrollable. A great number of animals were infected and two young men died in the hospital after suffering tortures of rabid convulsions. A very rigid and effective muzzling ordinance was enacted by the city commission, requiring the muzzling of all dogs during the months of July, August and September, except those confined or held on a leash. This ordinance is being strictly enforced and it is a daily occurrence for the municipal judge to penalize violators. The public is well satisfied with its enforcement and but very little if any discontent is voiced by the city dog fanciers. The Livestock Sanitary Board has issued a quarantine of the territory directly surrounding Portland, requiring all canine animals running at large, to wear muzzles.

In the report for the Philippine Islands, Dr. Archibald R. Ward describes the veterinary education in the Philippines as follows:

University of the Philippines: The popularity and success of the College of Veterinary Science, University of the Philippines, constitutes one of the brightest features of the progress of veterinary affairs in the islands. Established three years ago with a curriculum of four years, the college was strengthened the next year by lengthening the course to one of *five years of nine months each.*

Happily at the time of the foundation of the college there were men on the board of regents who appreciated the necessity for high and identical standards for veterinary and for medical education. Among them were Murray Bartlett, now President of the University of the Philippines, a fact that augurs well for the continuation of a policy of uplifting the veterinary profession by giving its recruits an education commensurate with the problems that it faces.

During the first seven months of the college clinic, there were entered 510 cases of disease, distributed among 457 animals. These figures for a period at the very beginning of

such a clinic are gratifying and give evidence of the need for general practitioners.

In the report of the Committee on Legislation we find the following arraignment of the sub-commttee on Military affairs:

As chairman of the committee I wish to point in conclusion to one phase of the failure of popular government that every citizen of our fair land should be awake to and which calls for personal duty, that does not cease now by the election of United States Senators by popular vote. It is a fact that a sub-committee, yes, one man of a Senate committee, may deny relief to the people, even though the people's representatives speak unanimously in behalf of a measure. Let me be more specific: Senator Bristow, a member chairman of the sub-committee of the Senate Military Committee, by his defiant action in refusing to call the sub-committee together for action by which a vote could have been taken, set at defiance the expressed will of the people to correct this great wrong to our profession. No man is greater than his country and no man greater than the cause you and I represent. We were entitled to a report from that sub-committee and no people's representative was justified in denying the same. An adverse report by the sub-committee would have afforded us an opportunity of testing the attitude of the Senate Military Committee as a whole, more than a maiority of whom had expressed themselves as favorable to the bill and I believe would have approved the House Bill. This subterfuge, by which we were denied a hearing by the Senate in behalf of our measure, presents such a menace to popular government that it behooves every man interested in good government to protest actively against such a condition. Popular elections of our Senators has not come too soon. The recall of all such officials recreant to their trust will as surely follow when once the people learn of the arbitrary power that can be exercised by one man.

It is noteworthy that Senator Bristow flatly denies the foregoing charge of unfairness to the army veterinary bill stating that he favored the passage of it and endeavored to secure its report from the sub-committee, but was prevented from doing so by Senator Clark of Arkansas.

The Committee on Veterinary Anatomical Nomenclature have decided upon and reported upon terms concerning the bones, joints, muscles, digestive system, respiratory system, and urogenital system. These terms include nearly three thousand names. It is hoped that these will be adopted as a standard by those teaching anatomy at various veterinary colleges and by state veterinary examining boards.

The Committee on Necrology reported the death of the following members of the Association during the past year:

Thomas E. Budd, D. V. S., Orange, N. J. Death was due to blood poisoning, contracted while holding an autopsy on a cow.

William Dougherty, V. S., D. V. S., Baltimore. Death was due to fatty degeneration of the heart.

Geo. S. Baker, A. B., D. V. S., Berkeley, California, died the day after his return from Manila, where he had been for a year on official business connected with the Bureau of Animal Industry.

Walter McHenry, V. M. D., Waverly, Iowa. Cause of death is not stated.

Gerald P. Dillon, D. V. S., R. W. Hewett, D. V. S., and Arthur C. Brown, D. V. M., were reported dead by the postoffice authorities with no particulars of the demise given.

The following quotation from the recommendation of the Committee on Veterinary College Investigation is of unusual interest at this time, in view of the attitude of some of the schools to a longer course and higher matriculation requirements:

Matriculation: The first great need which has been more and more deeply impressed upon your committee, as a result of this close personal study, is the need of higher matriculation requirements. We agree heartily with the general impression that seems to exist throughout this Association, that this is the first and most fundamental thing in professional improvement; that this is a pivotal point in veterinary education, and when we move this pivotal point we necessarily move the whole structure.

There does not appear any necessity for any sudden and extreme movements. Veterinary schools that have been doing good work for so many years deserve, and in the interests of this Association must have, careful consideration and reasonable protection, so

long as they appear willing to raise matriculation requirements with moderate rapidity.

The veterinary field now fairly well filled, there does not exist the urgent demand for large numbers of veterinarians, and the public can now afford to pay more money and wait a longer time for more thorough preparation of its young men.

The report of the Committee on Reorganization of the Association will be discussed at length next month.

The report of the Special Committee for the Detection of Glanders was published in full in November issue of VETERINARY MEDICINE.

The address of Dr. W. A. Evans of Chicago, on the "Improvement of the Milk Supply" is of great value. It is impossible to abstract it within the limits of this article; it will be published in full in a later issue.

TENTH INTERNATIONAL VETERINARY CONGRESS.

Matters are shaping themselves favorably to a representative attendance of American veterinarians at the Tenth International Veterinary Congress in London August 3rd to 8th next. Since our last mention of the European veterinary tour planned for the next summer, the following have definitely stated they will be members of the proposed tour: President and Mrs. C. J. Marshall, Philadelphia; Dr. and Mrs. L. Enos Day, Chicago; Dr. E. H. Shephard, Cleveland; Dr. F. B. Hadley, University of Wisconsin; Dr. W. Reed Blair, New York; Dr. J. B. Hardenbergh, Philadelphia; T. B. Harries, Calgary, Alberta.

The Organizing Committee for the Tenth International Congress have issued the following circular relative to the program of the Congress:

The Tenth International Veterinary Congress will be held in London from the 3rd to the 8th of August, 1914.

This is the Jubilee Congress, and it is being held in London by the express desire of the veterinarians of the world in honor of a distinguished English veterinarian—John Gamgee—at whose suggestion international veterinary congresses were first instituted.

Although it is not customary for British governments to finance international congresses of any description, the British Government is taking a great interest in the coming congress, and invitations in the following form have been issued by the British Foreign Office to the various countries, inviting them to send official delegates.

Foreign Office, September, 1913.

His Majesty's Representatives Abroad.

Sir: I transmit to you herewith copies of the programme of the Tenth International Veterinary Congress which it is proposed to hold in London from August 3rd to 8th, next year, with the request that you will communicate it to the Government to which you are accredited, inviting them at the same time to send delegates thereto.

The history of these Congresses is as follows:

Forty-nine years ago at the suggestion of a distinguished British veterinarian, John Gamgee, the first International Veterinary Congress was held. Gamgee's suggestion was put forward on account of cattle plague which had travelled from Russia practically all over Europe devastating the herds, and he recognized that the control of animal plagues could not depend entirely upon each country itself, but must be the common care of all. The wisdom of Gamgee's suggestion was immediately recognized by all the European countries. These Congresses inter alia discuss all international questions in relation to animal plagues.

Arrangements could not unfortunately be made to hold the first of any of the other Congresses in Great Britain, but they have been by arrangement held every five years in various capitals of Europe. The Governments of the various countries concerned have always issued invitations to other Governments to send delegates.

The Ninth Congress was held at The Hague in 1909 and on that occasion the Governments of Argentina, Austria (including Bohemia, Croatia and Slavonia), Bavaria, Belgium, Bulgaria, Colombia, Cuba, Denmark, Germany (including Saxe Weimar), France (including Algeria and Tunis), Greece, Guatemala, Hungary, Italy, Japan, Luxemburg, Mexico, Norway, Netherlands, Roumania, Russia, Saxony, Servia, Sweden, Switzerland, United States of America, Uruguay and Wurtemburg were represented, as well as Great Britain and certain of the British over-sea dominions.

Although the Congress is not promoted by His Majesty's Government they take a great interest in the objects for which it is being summoned, and would learn with pleasure that the invitation had been accepted. They would also view with satisfaction the separate representation at the Congress of such Educational, Scientific, or other bodies in foreign countries as are interested in promoting the veterinary and kindred sciences.

The British Committee of Organization extend a hearty invitation to their foreign colleagues in every country, and they desire to inform visitors to the congress from abroad that it will be more convenient if they arrange to arrive in London on Saturday, August 1st. It is the intention of the British Committee to hold a preliminary reception on the evening of Sunday, August 2nd, to enable members to meet each other, to discuss the arrangements for the official opening of the congress, and to obtain any further information regarding the arrangements they may desire.

The official opening will take place on Monday, August 3rd, 1914, when the committee hopes to secure the patronage of an exalted personage to open the congress, but arrangements with regard to this matter have not yet been completed.

Place of Meeting.

The meetings of the congress will be held at Central Buildings, Westminster, London, which offer exceptional facilities for the purpose.

The place of meeting is close to the Houses of Parliament, and the position is exceptionally convenient in relation to hotels, restaurants and amusements.

Entertainments.

The foreign Office has consented to give an entertainment in honor of the congress. The arrangements for the other banquets and receptions which will be given in honor of the congress have not yet been completed, but full particulars will be circulated to the national committees for publication at as early a date as possible.

The British committee are also organizing excursions of the following description:

1. Visits to noted herds and studs within easy reach of London. They have already been informed that permission will be granted to visit the Royal herds at Windsor.
2. Visits to the Quarantine and Research Stations of the Board of Agriculture.
3. Excursions after the congress to places of historical interest and places noted for beautiful scenery.

In designing the itineraries due regard will be paid to the wishes of those who may desire to combine pleasure with instruction by visiting districts in which there are noted studs, herds, and flocks.

Traveling.

The committee is trying to arrange with various railway and steamship companies in Great Britain and abroad to allow special concessions to those attending the congress, and they have thought it advisable to seek the advice of Messrs. Thos. Cook and Son, who have undertaken to give every assistance and to provide interpreters at the various railway stations on Saturday, August 1st, for the convenience of those arriving from abroad who are not well acquainted with London.

These arrangements will form the subject of a further publication when they are completed.

Hotel Accommodation.

There is a very great number of good hotels and restaurants within a stone's throw, as it were, of the meeting place. Hotels and restaurants in London are excellent, and the tariffs are very moderate. The tariff in good hotels varies from $1.25 upwards for a single room, bath and English breakfast. Visitors who do not desire to take pension will have no difficulty in obtaining rooms in first class hotels at $1.25 and up.

It is not possible in this article to furnish a complete list of good hotels

which are suited conveniently for the place of meeting. A full list, however, together with their tariffs and approximate distance from the place of meeting will form the subject of another publication when the arrangements with the various proprietors have been completed.

Subscription of Membership.

The British committee have fixed the amount of the subscription for ordinary members at one pound = 5 dollars = 20 marks = 25 francs. The subscription for lady members has been fixed at five shillings = 1 dollar 25 cents = 5 marks = 6 francs 25 centimes.

Subscriptions should be sent to the Honorary Treasurer, Mr. F. W. Garnett, J. P., M. R. C. V. S., 10 Red Lion Square, London, W. C. It has been suggested by several of the National Committees that the various Secretaries of these Committees might collect subscriptions in their own countries and forward them in bulk. The Honorary Treasurer desires it to be known that while he thinks it would be simpler for the purpose of accounting, that each individual should send his own subscription, he has no objection to the subscriptions being sent in bulk, provided full details in connection with each subscription are furnished by the Secretary of each National Committee

Subjects for Discussion and Reporters.

The following is a list of the subjects which will be discussed together with the names of those savants who will act as Reporters:

GENERAL MEETINGS.

1.

Official Opening.

2.

FOOT AND MOUTH DISEASE.

Reporters [Those marked * have not yet replied]:

Herr Geheimer Regierungsrat, Dr. Nevermann, Berlin.

M. E. Leclainche, Inspector General Chef du Services Sanitaires au Ministere de l'agriculture, Paris.

Dr. Mohler, United States Department of Agriculture.

M. le Docteur Remmelts, Chief Inspector of the Veterinary Service, The Hague.

Herr Prof. E. Hess, in der Fakultat der Veterinarmedizin, Universitat, Bern.

Prof. A. E. Mettam, Principal, Royal Veterinary College of Ireland.

*Herr Dr. J. Rudovsky, Veterinäreferent, Brünn.

3.

TUBERCULOSIS.

Herr Prof. Dr. Eber, Direktor des Veterinar Instituts, Leipzig.

M. le Prof. Valée, Directeur de l'ecole Veterinaire, Alfort.

Prof. Sir John McFadyean, Principal, Royal Veterinary College, London.

M. G. Regner, Veterinary Department, Ministry of Agriculture, Stockholm.

M. le Prof. de Jong, University, Leiden.

4.

EPIZOOTIC ABORTION.

Herr Regierungsrat Prof. Dr. Zwick, Kaiserliche Gesundheitsamte, Berlin.

M. le Prof. Moussu, l'ecole Vétérinaire, Alfort.

Herr Sanitatstierärzt Sven Wall, Offentlicher Schlachthof, Stockholm.

Sir Stewart Stockman, Chief Veterinary Officer, Board of Agriculture, London.

5.

PUBLIC CONTROL OF THE DISTRIBUTION AND SALE OF MILK IN THE INTERESTS OF PUBLIC HEALTH.

Dr. A. D. Melvin, Chief of the Bureau of Animal Iudustry, Washington.

Herr Geheimer Regierungsrat Prof. Dr. von Ostertag, Direktor der Veterinarabtilung des Kaiserlichen Gesundheitsamtes, Berlin.

M. S. P. Nystedt, Erste Stadtierärzt, Stockholm.

Mr. J. W. Brittlebank, D. V. S. M., M. R. C. V. S., Public Health Department, Manchester

6.

CLOSING MEETING.

SECTION I. [Veterinary Science in Relation to Public Health.]

(1) Meat Poisoning—Its Pathogenesis and the Measures Necessary to Guard Against It.

Herr. Prof. Bongert, Tierarztlichen Hochschule Berlin.

Schlachthofdirektor Dr. Hans Messner, Karlsbad.

*Dr. Guillaume, Directeur de l'abattoir de la Ville de Nice.

(2) General Principles to be observed in the Inspection of Carcasses and Organs of Tuberculous Animals with a View to Determine Their Safety as Articles of Human Food.

M. le Dr. Stubbe, Inspectour Veterinaire General au Ministère de l'interieure, Brussels.

M. Cesari, Vétérinaire Sanitaire de la Seine, Paris.

Herr Obertierarzt Dr. Nieberle, Hamburg.

*Herr Sanitatsveterinär Hy. Hansson, Stockholm.

(3) Disinfection of Wagons.

M. le Prof. Dr. R. Bidart, a la Faculté de Medicine Vétérinaire, Université, Buenos Aires.

Herr Regierarzungrat Dr. Titze, Kaiserliche Gesundheitsamte, Berlin.

M. Rabieaux, Inspecteur General des Services Sanitaires aux Ministére de l'agriculture, Paris.

*Prof. Meloni, Naples.

Section II. Pathology and Bacteriology.

(1) Johne's Disease.

M. le Dr. Olaf Bang, Copenhagen.

Herr Prof. Dr. Miessner, Tierärztliche Hochschule, Hanover.

Mr A. L. Sheather, B. Sc., M. R. C. V. S., Royal Veterinary College, London.

(2) Bovine Piroplasmoses [European].

Herr Prof. Dr. Knuth, Abteilungvarstcher im Hygienischen Institut, Tierärztliche, Hochschule, Berlin.

M. le Prof. S. von Ratz, l'ecole Vétérinaire Superieure, Budapest.

Mr. W. G. Wragg, M. R. C. V. S., Laboratory of the Board of Agriculture, London.

(3) Ultra-visible Viruses.

Dr. K. F. Meyer, University of California, U. S. A.

M. le Prof. Panisset, l'ecole Vétérinaire, Lyon.

*Herr Dozent Dr. Pfeiler, Leiter der Abteilung fur Tierhygiene am Kaiser Wilhelm Institut, Bromberg.

(4) Distemper—Etiology and Vaccination.

Herr Prof. Dr. S. Sigismund Markowski, Tierärztliche Hochschule, Lemberg.

M. Carré, Chef de Laboratoir au laboratoir des Recherches du Ministère de l'agriculture, l'ecole Vétérinaire, Alfort.

Section III. Epizootiology.

(1) Anthrax.

Dr. W. H. Dalrymple, Louisiana State University, U. S. A.

Herr Dr. Aladar Lukacs, Laboratorium fur Schutzimpfstoffe, Budapest.

Herr Rektor und Prof. Dr. J. Szpilman, Tierärztliche Hochschule, Lemberg.

Major Holmes, Imperial Bachteriologist, Muktesar, India.

(2) Swine Fever.

Dr. Marion Dorset, U. S. A. Department of Agriculture, Washington.

Herr Hofrat Rektor und Prof. Dr. Hutyra, Tierärztliche Hochschule, Budapest.

*Herr Bezerkstierärzt Dr. R. Frauenberger, Friestadt, Austria.

*Herr Dr. Glässer, Repetitor an der Tierärztlichen Hochschule, Hanover.

(3) Glanders.

M. M. de Roo, Inspecteur Vétérinaire Principal, au Ministère de l'agriculture, Brussels.

M. Drouin, Vétérinaire Directeur de lo Cavalarie de la Cie; Generale des Voitures de Paris.

Herr Prof. Dr. J. Schnürer, Tierärztliche Hochschule, Vienna.

Mr. J. R. Jackson, M. R. C. V. S., Board of Agriculture, London.

Herr Prof. Dr. Peter, Landestierärzt, Hanover.

(4) Sarcoptic Mange of the Horse.

M. le Vétérinaire Principal A. Barrier, Paris.

Col. Butler, War Office, London.

Herr Landesveterinareferent Theophil Halski, Czernowitz, Austria.

Section IV. Veterinary Medicine and Surgery.

(1) Anaesthesia.

M. le Prof. Hendricks, l'ecole Vétérinaire, Brussels.

Dr. L. A. Merillat, Chicago, U. S. A.

Herr Prof. Vennerholm, Tierärztliche Hochschule, Stockholm.

Prof. G. H. Wooldridge, Royal Veterinary College, London.

(2) Laminitis.

M. le Prof. Lienaux, l'ecole Vétérinaire, Brussels.

M. le Vétérinaire Principal Joly, du 9 ieme corps á l'armee. Tours.

Prof. James Macqueen, Royal Veterinary College, London.

(3) Surgical Treatment of Roaring.

Herr Prof. Dr. Eberlein, Tierärztliche Hochschule, Berlin.

Dr. W. L. Williams, Cornell University, U. S. A.

M. le Prof. Dr. Fontaine, l'ecole de Cavalarie, Saumur.

Mr. F. T. G. Hobday, F. R. S. E., F. R. C. V. S. London

(4) The Use of Drugs in the Treatment of Disease Caused by Nematode Worms.

M. le Prof. Van den Eckhout, l'école Vétérinaire, Brussels.

M. le Prof. Raillet, l'école Vétérinaire, Alfort.

Prof. J. F. Craig, M. A., M. R. C. V. S., Royal Veterinary College of Ireland, Dublin.

M. le Prof. Perroncito, R. Universitá di Torino, Instituto di Parassitologia, Turin.

Section V. Tropical Diseases.

(1) Diseases Transmitted by Ticks;

Their Classification, Treatment, and Prevention.

*Dr. D. E. Salmon, Washington, U. S. A.

M. le Prof. J. Ligniéres, Faculte de Medecine Veterinaire d l'universite, Directeur de l'institut National de Bacteriologie, Ministere de l'agriculture, Buenos Aires.

Sir A. Theiler, K. C. M. G., Director of Veterinary Research, Transvaal.

Mr. C. E. Gray, M. R. C. V. S., Principal Veterinary Surgeon, Transvaal.

*Dr. Paulo Parreiras Horta, Directoria Du Service Veterinaria, Rio de Janeiro.

(4) Diseases Transmitted by Winged Insects; Their Classification, Treatment and Prevention.

M. Cazalbou, Veterinaire en 1ere au 70 ieme d'artillerie Rennes.

Mr. R. E. Montgomery, M. R. C. V. S., Veterinary Bacteriologist, Department of Agriculture, Nairobi, British East Africa.

*Dr. L. C. Howard, Bureau of Entomology, Department of Agriculture, Washington, U. S. A.

*Dr. Pinto Guedes, Rio de Janeiro.

*Dr. Christino Cruz Filho, Rio de Janeiro.

Prof. A. Lanfranchi, Directeur Institut de Pathologie Veterinaire, Parma, Italie.

It is gratifying to note that the the American delegation has been given such splendid consideration on the program. We should concentrate our efforts to securing a large delegation to the Congress from the United States, as such a representation will not only be a credit to our profession but will impress the delegates of other countries with the interest taken by the members of our profession in all of the important affairs concerning all phases of veterinary science.

It is advisable that all those desiring to become members of the Congress, irrespective of whether it is their intention to attend or not should forward the membership fee of $5.00 to Dr. A. Eichhorn, Bureau of Animal Industry, Washington, D. C. All members will receive a complete printed report of the meeting, which alone will be worth more than the membership fee.

It is also desirable that all those intending to attend the Congress, should notify Doctor Eichhorn, or the Bureau of University Travel, 31 Trinity Place, Boston, of the fact, as it will be a material advantage to the representatives from the United States to engage rooms at a selected hotel that may be used as headquarters for the American representatives.

This notification should be sent, irrespective of whether you intend to take part in the veterinary tour of Continental Europe, or whether it is your intention to merely attend the Congress.

The European Veterinary Tour has been made official for American Veterinary Medical Association, the United States Live Stock Sanitary Association, the Missouri Valley Veterinary Association, and perhaps some other organizations. That it is going to be successful, largely attended and very beneficial to those attending it, is assured. Steamers leaving New York in June are booked for their full capacity many weeks in advance of each trip, and those intending to take part in this tour, or as yet undecided on this subject, should write the Bureau of University Travel, or Dr. Eichhorn at once, as the time yet remaining for reserving accommodations on the boats is very limited.

THE ARMY'S NEED FOR VETERINARY LEGISLATION.

In this issue we give another of Dr. Steele's educational articles on the need for army veterinary legislation. No article, heretofore published, has shown more forcibly the necessity for raising the status and increasing the authority of the veterinary corps in the American army.

The enormous loss of horses and mules in the British army during the Boer War, due solely to lack of authority on the part of veterinarians in the British army at that time, is but hinted at in this article. Conditions were really much worse than here described. The lesson was not lost on the British Government, nor would such a lesson be lost an any government. Let us hope that the United States govern-

ment may profit by the experience of Great Britain in the Boer War and be saved from a similar disaster. There is just one way to avoid it and that is by giving the veterinary corps adequate authority in matters concerning horses and mules in the United States army.

On February 2nd the following members of the profession appeared before the House Military Committee: Drs. John R. Mohler, Adolph Eichhorn, Gerald E. Griffin, J. H. Haynes, Ingild Hansen, Jos. Hornbaker, J. C. McNeil, F. A. Bolser, J. P. Turner, and W. Horace Hopkins. They were assisted by Messrs. Hall and Reeve, who were associated with the House Military Committee for over fifteen years. A full and free discussion of the merits of the bill was followed by the Committee's unanimous recommendation in favor of the bill, with one slight change in section five, where, in line two, the reading is Surgeon General instead of Chief of the Quartermaster Corps. Later in the day Drs. McNeil, Bolser and Hoskins waited on Senator Kern and their plea won him to introduce into the Senate Mr. Hay's bill as it passed the House Military Committee. Senator Kern accordingly introduced the bill now known in the Senate as S. 4331 (the House bill being H. R. 4541). Every effort has been made to get a fair sub-committee for the bill in the Senate Military Committee. This has been accomplished by the appointment of the following: Senators Luke Lea of Tennessee, Charles S. Thomas of Colorado, and Thomas B. Catron of New Mexico. The bill has the best of prospects of passing the House very soon. *The Army and Navy Journal* of February 7th quotes Mr. Hay as saying that in his opinion this bill will become a law in this session of Congress.

This bill is so drawn that the Secretary of War will be able to place the veterinary officers under the control of any department which he may deem best for the interest and the efficiency of the service. Every effort has been made to so draw the bill as to avoid any jangle in the War Department as to where the veterinary officer belongs, in other words the Army Veterinary Corps will not, by the provision of this bill, be attached to either the Quartermaster Corps or the Medical Department.

Senator Bristow of Kansas, who has long been looked upon as the most formidable opposition the bill will encounter in the Senate, has declared himself as favoring the passage of the bill in its present form. There is little question that it will be enacted into law during this Congress if the veterinarians outside of the army support it as they should and as they doubtless will.

CHOOSING A LOCATION AND CULTIVATING IT.

A matter that concerns the man, who expects soon to receive his diploma from a veterinary college, almost as much as the question of whether or not he will pass the "finals" and receive his degree, is the choice of a location. With many this is a question fraught with even more interest than the matter of graduation, because of the latter they feel sure, but on the other hand, what is a good or even possibly fair location for them is a matter about which they have serious doubts.

In this issue we have a most illuminating article from Doctor Baker that describes the condition over a large section of the country. It should prove of great value to veterinarians who contemplate locating in any of the western states.

The article also contains a lesson for most veterinarians, in urging upon members of the profession a careful study of poultry pathology.

It is astonishing how indifferent most veterinarians are to this field of practice. The annual production of

(*Continued on page* 204.)

WORLD'S WORK in Veterinary Science
A digest of all the Current Literature of Comparative Medicine
By Dr. L. W Fetzer Washington, D.C.

Sanitary Significance of Body Cells in Milk.

"Normal milk contains cells derived from the body of the cow which are of two entirely different types: (a) white blood corpuscles which are largely of the polynuclear and polymorphonuclear type; these cells make their way into the milk by passage through the epithelial lining of the secreting portion of the gland, possibly, also, through the epithelial lining of the ducts of the gland; (b) epithelial cells, nuclei, and cell debris discharged from the epithelial lining of the secreting portion of the gland and possibly also from the ducts.

The number of these cells in apparently normal milk is exceedingly variable even in the milk from the same cow. The variation in the number of cells in the milk from the different quadrants of the udder is almost as great as the variation in number of cells in the milk of different animals. Apparently the strippings always contain a greater number of cells than the milk from the earlier part of the milking.

It is very common to find milk that contains so few cells that they can scarcely be counted with the method of examination used, i. e. less than 5,000 per cc., but milk containing one or more millions of these cells per cc. is met with frequently. The highest cell count which has been found in this work was in the case of the strippings from one quarter of the udder of a cow eight days after calving where the milk showed the enormous count of 54,300,000 cells per cc. Nevertheless, this milk was of an entirely normal appearance and careful bacteriological examination of the udder showed no evidence of streptococcic infection. This milk had an entirely normal taste and caused no evil after-effects.

Out of 122 individual cows whose milk has been examined, 59 have been found to give cell counts under 500,000 per cc., 36 gave counts between 500,000 and 1,000,000 per cc., and 27 gave cell counts over 1,000,000 per cc. The milk of all of these cows was normal in appearance and was sold or used by their owners, who had every reason to suppose that the milk was normal milk.

There are no satisfactory data at hand which show whether there is, or is not, a relation between high cell counts and any of the following: streptococcic infection of the udder or other pathological conditions of the udder, colostral milk, milk from cows that are nearly dry, in heat, or in poor condition of flesh, etc. Such evidence as we have indicates that it is not at all likely that any of these conditions may be recognized by cell counts alone, especially in samples of market milk which consists of a mixture of the milk from several cows."—R. Breed, *Jour. of Infect. Diseases*, 1914, Vol. 14, No. 1, pp. 93-99.

Receptivity of Guinea Pigs for Tubercle Bacilli From Various Sources.

It was noted that guinea pigs when given intra-peritoneal injections of a good culture will serve well for noting the virulence of either the human or avian type of bacillus. The guinea pig is especially well adapted for establishing whether a loss or an increase in virulence of the tubercle bacillus has taken place. By passing the human virus through pigeons changes in virulence do take place and these depend upon the kind of feed given.

The human tubercle bacillus is very inconstant as regards virulence. It changes with time, and by using a different method of cultivation. (By request.)—B. MURSAJEFF, *Arch. f. Vet. Wiss.* (*Arch. Vet. Nauk.*) St. Petersburg, 1901, Vol. 31, pt. 2, pp. 223-227.

On the Antitryptic Reaction Exhibited in Pregnancy.

The antitryptic index was determined in the sera of 25 pregnant women and their infants. "The antitryptic index of the mother's serum was found to range from 1.5 to 2.5, averaging about two, while that of the infant's was found to range from 0.9 to 1.2, averaging slightly over one. The antitryptic index of a series of cancer cases previously reported shows a range of variation from 1.2 to 3.5 and gives an average over 2. It will thus be seen that the blood of this series of 25 infants appears to be practically normal. On the other hand the blood of the mother contains an extremely high percentage of antibodies to trypsin, averaging over twice the normal, a characteristic also exhibited by cancer blood."

The antitryptic reaction is destroyed by heating the serum for one-half hour at 60° C. and in this respect it resembles the complement fixation on work of these authors. These two reactions may have a common origin. —G. H. A. CLOWES AND F. C. GOLDSBOROUGH. *Abs. in Proc. Sec. Expt. Biol. and Med.* 10, (1913), No. 3, p. 109.

Specific Paratuberculous Enteritis of Cattle.

The paratuberculosis enteritis found in America is identical with the disease of European countries. By intravenous inoculations with material from the mesenteric lymph nodes the disease has been reproduced in calves 30, 92 and 96 days of age, and the time of incubation was from four to eight months. One of the animals died 12 months after infection. Feeding experiments gave negative results. Natural infection probably takes place in the early days of life by contact with infected mothers or surroundings, especially in certain pastures, where B. paratuberculosis is saprophytic. This probably is also of importance for the infection of adults. B. paratuberculosis can be cultivated on solid and liquid culture media containing glycerin extracts of acid-fast bacilli, particularly tubercle bacilli or B. phlei, and six strains have thus far been isolated. The growth is slow and only possible at body temperature. A culture medium consisting of equal parts of tuberculin and bouillon, with a two per cent agar and one per cent serum, is the best for initial isolations. The author believes that the use of antiformin should be used for contaminated material. The bacterioscopic examination of feces and rectal scrapings is only of diagnostic value in about 40 per cent of the cases in the advanced stages of the disease. Avian tuberculin is an unreliable diagnostic agent for paratuberculosis. Paratuberculin, and perhaps some of the serum tests may prove to be more reliable in future, and B. paratuberculosis is, in certain respects, related to different representatives of the acid-fast group of bac-

teria.—K. F. MEYER, *Jour. Med. Research*, 24, No. 2, pp. 147-190.

Treatment of Galls.

Textbooks, especially the older ones, usually recommended superficial local applications of one sort or other as a cure, etc., for this condition. Having no success with this method of treatment the author resorted to operative procedures which consisted of drawing the fluid from the parts and giving a partial injection of dilute tincture of iodine One of the animals treated had just recovered from the pectoral form of equine influenza. Chromogallin, a solution containing a chromogenic coloring matter with iodine and iodine compounds, gylcerin, etc., when given subcutaneously in such cases, also yields good results.—A. STIETENROTH, *Tierärztl. Rundschau* 1913, Vol. 19, No. 45, p. 583.

Anthrax from a Hog Feed.

The feed given consisted of a mixture of fish meal, Russian barley and corn. As the animal test with white mice did not reveal the organism the cultural method had to be resorted to.—H. JAENISCH, *Zeitschr. Fleisch. u. Milchhygiene*, 1913, Vol. 24, No. 3, pp. 53-54.

Potato Poisoning in Cattle.

Ten calves aged from 7 to 10 months were fed once daily for a week previous to the illness on a heavy diet of small cooked potatoes, some of which were black, and a little corn meal with hay and grass. Water was drunk *ad libitum*.

On the fifth day at 11 a. m. two of the calves were standing, but hardly able to move. A small quantity of black liquid feces was passed, and the abdomen was not distended. Food was refused. At 6:30 p. m. of the same evening the animals were down, and appeared to be under the influence of a narcotic drug. In one animal the corneal reflex was absent.

The treatment given was subcutaneous injection of strychnine (½ grain), injection of 10 ounces normal saline solution, puncture of rumen, purgative, and tea infusions. The recovery was uneventful.—E. MCSWINEY, *The Vet. Record*. 1914, Vol. 26, No. 1,331, pp. 433-434.

Concerning Immunity to Bovine Tuberculosis

Does the subcutaneous injection of Antiphymatol (Klimmer) render bovines resistant towards artificial or natural infection with bovine tubercle bacilli?

Antiphymatol is prepared by passing human type tubercle bacilli through cold blooded animals. This renders the bacilli avirulent for guinea pigs. The vaccine tried on six bovines did not prove to have immunizing properties even though the animals were infected intravenously or subcutaneously three, six or eight months after the injections of the vaccine. The same negative result was noted with three animals infected by natural means.—A. EBER, *Zeitschr. f. Infektskr. u. Hyg. d. Haustiere*, 1913, Vol. 14, No. 4-5, pp. 203-230.

Paratyphoid in Man and Animals

The relationship between the paratyphoid infections in man and animals.

Bacterial diseases of animals slaughtered for meat are said to rarely cause meat poisoning in man. The meat poisoning organisms are saprophytes, and are to some extent excreted by diseased or healthy men and animals. They are found normally in healthy men and animals, and in such cases they may be the cause of secondary infections. They infect the carcasses and products of diseased animals, because these form a particularly favorable culture medium for the organisms. Rules are presented for the purpose of preventing this source of poisoning.—D. A. DE JONG. *Rev. Gen. Med. Vet.* 22, 1913, No. 255, 256, pp. 117-123.

Materia Medica and Therapeutics

Aconite—The Antidote of Inflammation

DR. C. F. LYNCH, Terre Haute, Ind.

Aconite, one of the most powerful therapeutic agents that we possess for the treatment of inflammation, wherever located, is not used to the extent that it deserves in veterinary medicine. This non-use of the remedy is in a measure explained by the marked susceptibility of the lower animals, and especially the horse to the action of the drug. However, a more thorough understanding of this agent, and the proper methods for its use, should lead to a more widespread usage of it by veterinarians in all parts of the country. Aconitine (the active principle of aconite) is especially applicable at this season, and should form part of the armamentarium of every practitioner during the winter months, when so many indications for the remedy are to be found. In my medicine case aconitine remedy is number one, and I use it more frequently than any other single remedy.

My object in calling this drug to your attention is that you may the more thoroughly understand its action and therapeutic uses, and the more intelligently apply it, in the myriad of cases wherein its use is so clearly demanded.

Aconite or Monkshood is a plant which grows in the mountainous portions of Europe and the northwestern part of the United States. The part of the drug which is official in the United States Pharmacopeia is the root, and this root in order to meet the official requirements must contain not less than .005 per cent of the alkaloid aconitine, to which the therapeutic activity of the drug is largely due.

Aconite root is found in the shops as a conical, rough, brownish-colored root, which on breaking is found to have a yellowish-white interior. It is odorless, but has a peculiar taste, which is at first sweetish, but later becomes acrid, leaving a sensation of tingling and finally numbness.

Like many other vegetable drugs aconite owes its activity to an alkaloidal principle, which is known as aconitine. Aconitine is one of the most powerful poisons that we have in the entire range of materia medica and it must be handled understandingly, otherwise bad results will follow.

Of the official preparations there are only two of importance.

Fluidextract of aconite root is a semi-alcoholic fluid, the dose of which for the horse is Miii-xx; for the dog ♏ 1/10-ii.

Tincture of aconite root is also official and is 10 per cent of the strength of the fluid extract. The dose for horse is M xx-℥i; for the crow ℥ss-iss and for the dog ♏ ii-x.

There is another preparation of aconite which should be mentioned only as warning. This is the so-called Fleming's Tincture which is of 79 per cent

of the strength of the fluid-extract and should not be used.

There is another liquid preparation of aconite on the market which I have always found very reliable and most convenient for dispensing. This is the so-called Specific Medicine Aconite prepared by Lloyd Bros., of Cincinnati, Ohio. This preparation has always given me most dependable results, and in dealing with so potent a remedy I like to use one that is absolutely dependable. The dose of the Specific Medicine for the horse is Mi to Mii.

The alkaloid aconitine is also recognized by the U. S. Pharmacopeia and can be given to the horse in dose of gr. 1/30 and to the dog in dose of gr 1/200 to 1/100.

Physiological Action.

In order to understand the rational therapeutic uses of any drug it is essential that we first study thoroughly the physiological action of the drug.

Aconite when applied to the skin produces at first a mild degree of irritation and this is followed by numbness and finally anesthesia and loss of temperature perception, due to the paralysis of the sensory nerve endings in the skin.

When taken internally the drug has but little action on the stomach or intestines in small doses. It is a slight gastro-intestinal irritant, but produces vomiting only when used in large doses.

It is on the circulatory system that the action of aconite is of paramount importance. When given in small frequently repeated doses there is no drug that can compare with aconite as a circulatory sedative. The drug acts upon the heart by stimulating the center in the medulla and thus increasing the inhibitory power of the vagus nerve. In this manner it slows the rate of the heart beat, and at the same time increases the force of the systolic contraction.

In the acute fevers where we have a wildly beating heart which is pumping itself to death, there is no agent that is in the same class with acontine as a conservative force in the battle which we must wage for the life of the patient.

Many would class aconite as a heart depressant, but far from being such in these cases, it is more efficacious in conserving the vitality of the heart for the critical moment, which will come later in the disease, than all the heart stimulants in the materia medica.

The action of aconite on the vasomotor center is comparatively slight, but it does lend tone to the arterial capillaries and counteracts stasis. It promotes secretion of the skin, and of the kidneys and thus eliminates toxic materials. Temperature in febrile cases is rapidly and effectively reduced by this powerful agent, and respiration made more easy, and reduced in frequency.

Therapeutic Uses.

Aconite is pre-eminently the remedy for treatment of acute inflammation wherever found. Given at the proper time and in proper dosage its results are most satisfactory and reliable. Useful in all forms of acute inflammation, aconite is especially called for in acute inflammations of the respiratory tract.

Pneumonia, one of the most common diseases of this season, is met most efficaciously by aconite wisely administered. At the onset of pneumonia, immediately after the chill, and while the pathological condition is one of acute congestion with dilatation of the vessels and beginning stasis, aconite or its congener veratrum are by all means the remedies of choice. Aconite given in small doses repeated at frequent intervals over a period of twelve hours will meet the condition more successfully than any other agent we possess.

The rapid wiry pulse, the high blood tension, the wild beating heart, the hot dry skin, the staring anxious eyes, the

rapid labored breathing, the suppressed kidney secretion all call for aconite.

This drug will restore the rate of the heart to normal, will render the pulse soft and full, reduce blood pressure, restore the secretions of the skin and kidneys, quiet the rapid labored breathing, and exert a beneficial influence upon the entire complexion of the case.

Many start in the treatment of these cases with large doses of strychnine, digitalis and other heart stimulants. This is all wrong. The heart is already overworking itself. What it needs is sedation, not stimulation. Save your heart stimulants until later in the course of the disease when the cardiac muscle begins to show signs of wavering. That is the time for strychnine, digitalis, ammonia and like agents.

Belladonna added to the aconite in this early stage of pneumonia aids in overcoming the capillary stasis in the lung and forms a valuable addition to the prescription. I use, very extensively in these cases, a third remedy which may be new to some of you. This is bryonia, which is a remedy of signal efficacy in inflammations of the lungs and serous membranes.

In pleurisy, also before the stage of exudation aconite, bryonia and belladonna are three remedies which afford you a tower of strength in combating the disease. After the effusion has taken place remove the aconite from your prescription.

Acute bronchitis, acute coryza and acute inflammations of the meninges of the brain and cord also respond most favorably to the judicious use of aconite.

In acute febrile conditions affecting the gastro-intestinal tract you will also find aconite a most reliable agent.

Here after a primary cleansing out of the bowel, aconite given in combination with belladonna and ipecac in minute doses will restore normal conditions very rapidly. If the inflammatory condition is severely acute protect the mucous membrane with subnitrate of bismuth for a few days.

In acute mastitis this remedy given internally in combination with phytolacca decandra forms a most valuable adjunct to the local treatment by means of unguentum belladonnae.

In the treatment of acute febrile conditions with marked decrease of the urinary secretion the remedy can be more advantageously combined with sweet spirits of nitre to increase its diuretic action.

The keynote to success in the administration of aconite is to administer it early in the attack, and give in small doses repeated at frequent intervals.

Aconite is absorbed in about 15 minutes and eliminated almost equally rapid, so that to maintain its physiological effect the dose should be repeated every half to one hour.

Try this drug in your cases of pneumonia, pleurisy and other acute inflammations along the lines here laid down and your results cannot be other than satisfactory.

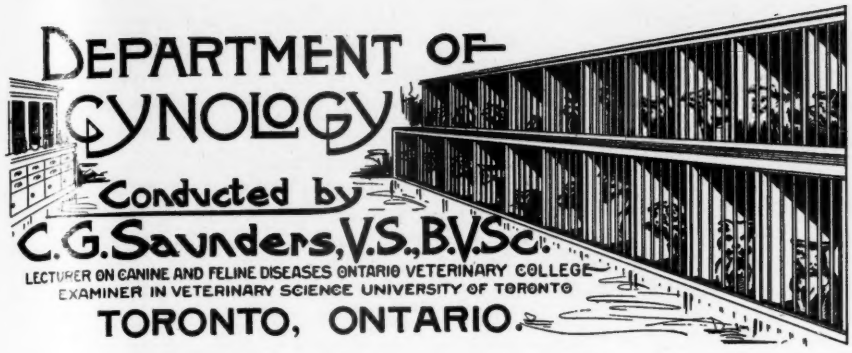
Aconite has another added virtue to the scientific veterinarian, in that it is such a potent agent that the quack who is unfamiliar with the rationale of its action is more or less afraid of it, and hence does not use it very freely.

Attention—Missouri Veterinarians

We want to reprint a revised list of the names and addresses of all veterinarians registered in the State of Missouri. All those who have moved since registering, please send me a postcard giving your license number, name and postoffice address.

This list will likely be ready for distribution in the latter part of April and will be sent to all those whose addresse we have.

D. F. LUCKEY,
Ex-Officio Secretary Veterinary Examining Board.
Columbia, Missouri.


DEPARTMENT OF
CYNOLOGY
Conducted by
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Diseases of the Kidney

DISEASES of the kidney in the dog are of relative unimportance owing to their rarity. For clinical purposes they may be classed as follows: (1) Acute nephritis (2) Chronic nephritis (3) Suppurative nephritis (4) Pyelitis (5) Degenerations (6) Neoplasms (7) Parasites.

Acute Inflammation of the Kidney. Acute Nephritis.

Etiology.—Acute nephritis occurs from various causes. It may arise from blows and injuries to the back, exposure to cold. It may occur during the course of infectious diseases, such as distemper, bronchitis, septicemia and pyemia, which fact is not remarkable when we remember that many bacteria and their toxins are excreted by the kidneys. Nephritis also follows poisoning by arsenic, murcury, phosphorus, lead, malefern, squill, turpentine, croton oil, cantharides, tar, phenic acid, ergot, etc. It may also arise from infection extending from the pelvis of the kidney (pyelitis) the ureters or bladder (cystitis).

Symptoms.—The most important, and in the course of severe infectious diseases, sometimes the only symptoms are in connection with the urine. There is well marked albuminuria, the quantity of urine (except in the initial stage, when for a few hours it may be increased) is much reduced, sometimes entirely suppressed for several days. The causes of this anuria are: stoppage of the urinary canals by casts, inflammatory swelling of the kidney tissues and consequent compression of the ducts and diminished secretion of water.

The specific gravity of the urine during acute nephritis is higher than normal, 1035—1050 and the urine itself is thicker in consistency, slimy, turbid, dark in color and may be blood-stained (hematuria). A microscopic examination of it reveals the various kinds of casts in large quantities, numerous epethelial cells and red and white blood corpuscles.

The discharge of urine occurs only in small quantities during acute nephritis and is accomplished by considerable pain and straining. If the bladder is examined per rectum it is found to be empty. Pressure over the loin causes pain, direct manipulation of the kidneys themselves is painful and they are found to be enlarged.

Renal colic is most marked at the commencement of the disease. The patient arches his back and the gait is staggering. In male animals one testicle is often drawn up. The appetite is suspended from the beginning and vomiting is common. Constipation generally sets in soon after the vomiting appears, to be later on alternated with diarrhea.

The temperature ranges from 103° to 105° F. The pulse is at first hard and strong but later on becomes weak and fast. Hydremic swellings appear on the head, breast, belly, scrotum, extremities and within the abdomen. Abdominal dropsy is also sometimes seen.

In the severer cases, tending to a fatal issue, the symptoms of uremia are added to the foregoing. Uremia consists of an accumulation of urinary constituents in the blood and tissues. The symptoms of this condition are a fall of temperature, vomiting, great weakness, dyspenea, convulsions and coma. The patient exhales a characteristic uriniferous odor from the lungs and skin.

Treatment.—The treatment of acute nephritis must begin with the prohibition of all foods and drugs having an irritant effect upon the kidneys. The diet must consist exclusively of milk. The bowels must be kept freely active with cathartics—calomel, one to two grains and the kidneys solicited by nonstimulating diuretics such as potassium acetate, five to twenty grains. If edema is present the potassium acetate may advantageously be replaced by digitalis.

To relieve the congestion warm moist compresses may be applied to the loins and hypodermic injections of morphine sulphate given. In urgent cases the patient should at once be placed in a hot bath, rubbed dry and kept warm with flannel coverings. Later on tincture of iron perchloride, five to twenty minims with a bitter tonic such as tincture of cinchona, one-half to one ounce may be given with advantage.

Chronic Nephritis.

Chronic inflammation of the kidneys may develop from the acute form or it may assume an insidious chronic form from the beginning.

Etiology.—Irritants to the kidney substance such as chemical irritants, bacteria, emboli and the extension of infection from the pelvis in cases of pyelitis may cause chronic nephritis where the irritation is not severe enough to produce acute nephritis.

Symptoms.—These come on so gradually that the disease may be far advanced before it is noticed. The patient exhibits an unexplained lassitude and loss of appetite, later dropsical swellings appearing on the dependent parts direct one's attention to the urine, which alone can give diagnostic data.

Upon examination we find that the urine has its specific gravity increased, and contains albumin, epithelial cells, casts, fatty granular cells, and sometimes also red blood corpuscles. The amount secreted is always diminished, although in the dog it is not always easy to get reliable information on this matter.

Upon further examination the pulse is found to be hard and tense and the heart beats strong and audible on both sides of the chest. The area of cardiac dullness on percussion is found to be increased. All these symptoms point to hypertrophy of the heart, a common sequel to renal disease. The temperature is usually only slightly above normal; thirst is greatly increased. The disease may go on to a fairly favorable termination, its intensity may increase, uremia and death supervening, or again it may pass into the chronic indurative stage.

When chronic induration of the kidney takes place, the urine becomes plentiful, is of a low specific gravity, contains few casts or epithelium and but little albumin. The dropsical swellings disappear; thirst is very intense, and the blood pressure is high. (Compensatory hypertrophy of the heart). If this compensation is complete the patient may survive for years, but gradually the strain on the heart leads to increasing incapacity of that organ. The pulse grows irregular and

feeble, catarrh of the bronchi, stomach and intestines sets in combined with dyspnea. Anemia is a constant symptom. The secretion of urine again diminishes, while the specific gravity and the albuminous content increase. Death finally ensues from uremia.

Treatment.—The treatment of chronic nephritis is much the same as for the acute form though the prognosis is more unfavorable. Cardiac tonics such as digitalis or caffein must first of all be administered and the bowels kept open with calomel. Potassium iodide should be given for its diuretic and deobstruent properties and the anemia combated with tincture of iron perchloride, one-half dram. The uremic symptoms must be met by drastic purgatives and stimulants. Elaterium is the drug of choice for this condition and should be given in doses of one-fourth grain.

Suppurative Nephritis.

This grave condition arises from the invasion of the kidney by pyogenic organisms during the course of some other diseases such as septicemia, pyemia, endocarditis, pneumonia through metastasis or during purulent cystitis via the ureters or from renal calcul. The condition occurs in two forms, the diffuse and localized (abscess of the kidney). In the latter form, the whole kidney may become changed, by the complete destruction of its parenchyma so that its capsule becomes a sac containing nothing but pus.

Symptoms.—These are usually masked by the symptoms of the primary disease, but emaciation, increased thirst, fluctuating temperature and anorexia point to suppuration and the urine should be examined. The urine, usually is offensive, contains blood and kidney detritus and is thick and slimy. In thin animals the kidney may be palpated from the exterior; and in small animals it may be palpated per rectum and the condition recognized.

Treatment.—The treatment of this condition is purely surgical and consists of aspirating the pus by puncture in the lumber region or the extirpation of the affected kidney by laparotomy. This operation will be more fully described later.

Pyelitis.—Inflammation of the Pelvis of the Kidney.

Etiology.—Pyelitis is the usual result of an infection spreading from the bladder to the kidney. It also often develops in the course of infectious diseases, and may be caused by irritant poisons and renal calculi. The presence of the Strongylus gigas in the pelvis of the kidney may lead to pyelitis. This, however, is of rare occurrence.

Symptoms.—The manifestations of pyelitis are so indefinite that we have to rely for its diagnosis almost entirely upon a microscopical examination of the urine. Pus and the cells characteristic of the epethelium of the pelvis, being found therein are indicative of this condition. In addition we may find coagulae of blood, necrotic mucous tissue, and if Strongylus gigas is the exciting cause, ova of this parasite. There is often difficulty in urination and colicky attacks of pain.

Treatment.—In addition to the treatment required for the primary disease. Antiseptics and astringents should be administered. Of these Formin (hexamethylene tetramine) is most effectual, exerting its antiseptic action by the liberation of formic aldehyde, along the whole urogenital tract. In chronic cases buchu and juniper in doses of one to two ounces may be given with benefit. For the pain give canabis indica in doses of one to two minims of the fluid extract.

Degenerations and Neoplasms of the Kidney.

Neither of these conditions is of much interest, from a clinical point of view, since in the dog their diagnosis

is most uncertain and treatment useless.

Parasites of the Kidney.

The parasite with which we are chiefly concerned is the Strongylus gigas, a nematode worm usually of a blood-red color, slightly tapering at the extremities. Its length may reach three feet. The ova are oval in shape and brownish in color, appearing granular or pitted on the surface. The diagnosis of infestation by this parasite can be made with certainty by the discovery of the ova in the urine by microscopic examination. Suspicion of this parasitism should be aroused by frequent attacks of renal colic, hematuria, rabiform symptoms and emaciation.

The treatment is repeated small doses of oil of turpentine, five to ten minims.

CANINE DISTEMPER: SOME CASE REPORTS

During the past few months I have done some work with a view to evolving a serum treatment for canine distemper.

The agent which I have used is a polyvalent serum containing antibodies for distemper. Produced by hyperimmunization with the virus and the secondary infection organisms commonly found in canine-distemper, bacillus, bronchisepticus, staphylococci and streptococci.

CASE 1. This was a black mongrel female obtained from the city dog pound. She had an exceedingly severe case of distemper; my prognosis was unfavorable.

Treatment: She received an injection of 4 cc. of distemper serum on August 26th, 27th and 28th. During these days the temperature was 104° F., 103° F. and 102.4° F., and the animal showed analagous general improvement.

From August 29th to September 2nd inclusive a daily injection of 2 cc. of serum was given. The temperature ranged nearly normal and on Sept. 5th the animal was pronounced fully recovered.

CASE 2. This was a sort of control for Case 1. It was also a black mongrel obtained from the city pound at the same time that Case 1 was secured—August 26th.

This animal was not very sick, not nearly so sick as the dog experimented upon. It was kept under the same conditions as Case 1, but received no serum nor any other treatment. The temperature on August 26th was 103° F. It gradually raised until the 30th, when it was 104.2° F. The animal died of pneumonia on September 11th.

CASE 3. A collie with a typical case of distemper. Temperature 104° F., appetite in entire abeyance. I was called to see this case in consulation with Dr Walter Repmann, October 9, 1913.

Treatment: 4 cc. of distemper serum was injected at once. By the following day the temperature had lowered to 103° F. and another injection of 4 cc was given. The following day the temperature was 102° F., and the animal's condition appeared in every way improved. The appetite was fair, 2 cc. of serum was given. October 12th the temperature was 102.1° F., otherwise the animal was the same as on the preceding day. Another injection of 2 cc. was given. On the following day the temperature was 103° F., appetite nil, condition apparently somewhat worse, 4 cc. of serum was given. On the 14th the temperature was 101° F., condition improved over the preceding day, another injection of 4 cc. of serum was given and the animal was not seen again until October 21st when it had completely recovered.

CASE 4. A daschhund, male, with typical distemper, pneumonia, conjunctivitis and rhinitis, prognosis rather unfavorable. This was another of Doctor Repmann's patients, to which I was called in consultation October 11th, 1913. At this time the temperature was 102.3° F. 4 cc. of serum was injected daily from the 11th to the 15th. The temperature was normal after the second day

and on the 20th the animal was pronounced fully recovered.

CASE 5. A cocker spaniel, female, with distempter and pneumonia. This was also one of Doctor Repmann's patients. I first saw her on October 16th when the temperature was 103.3° F. 4 cc. of serum was given on this day and also on the following day when the temperature was 102.2° F. From the 18th to the 23rd inclusive 2 cc. of the serum was given each day and on the 27th the animal was pronounced fully recovered.

CASE 6. Cocker spaniel, male, distemper complicated by pneumonia, an exceedingly severe case, prognosis very unfavorable. Like the preceding this was one of Doctor Repmann's patients, which I first saw on October 16th when the temperature was 104.1° F. 8 cc. of serum was given and on the following day the temperature was 103° F. On this day 6 cc. of serum was given and 24 hours later the temperature was 102° F., when 4 cc. of serum was given, and on the next day, the 19th, the temperature was 101° F. Treatment was discontinued and four days later the animal had fully recovered.

CASE 7. Cocker spaniel with distemper, pneumonic form. This like the two preceding, I first saw at Doctor Repmann's hospital October 16th. She received on the first and second days 6 cc of serum, on the third day 4 cc., and on the fifth, sixth and seventh 2 cc. each. At this time the animal appeared practically well and the treatment was discontinued. Later, however, chorea supervened, from which the animal died five weeks later.

The autopsy on this animal was very interesting. All along the spinal cord there were extensive hemorrhages as were there also in the brain. Complete resolution had taken place in the lungs. The only evidence of the pneumonia which the animal had had being a slight thickening of the connective tissues that marked the areas where the severest inflammation had been.

CASE 8. A daschhund with distemper and acute bronchitis. This animal was first seen on October 20th when the temperature was 103° F. The animal was given 8 cc. of serum on the first day, 4 cc. on the second and 2 cc. on each succeeding day until the 27th. On the 28th it was pronounced fully recovered.

CASE 9. Black cocker spaniel with distemper and laryngopharyngitis. Temperature 103° F. First seen on October 20th when 4 cc. of serum was given. On the 22nd this injection was repeated and on the 25th 2 cc. was given. On the 31st the animal was pronounced fully recovered.

CASE 10. A black mongrel, obtained from the dog pound, with typical distemper, bronchitis and gastro-enteritis. This animal was first seen on November 20th, when the temperature was 103.3° F. 8 cc. of serum was injected. On the 21st the temperature was 102° F. No treatment was given on that day and on the next the temperature was again 103.3° F. when 4 cc. of serum was given. On the 24th 2 cc. of serum was given. At this time the temperature was 102° F. On the 25th the temperature was 101° F. and the dog received no further treatment and was fully recovered by the 30th.

CASE 11. December 10th I was called in consulation by Dr. T. B. Crowe to see a trick dog that was being exhibited at one of the theaters. This animal had a very severe case of distemper and looked as if it must certainly die within a few hours. It was given 4 cc. of serum and the next day was much improved and received no further treatment until the fourth day when the temperature again was 103° F. and the animal was apparently almost as bad as when first seen. It was given another 4 cc. of serum and was again greatly improved in a few hours. It received no further treatment and was well in a little more than a week.

A Remedy for Chorea.

I have also had some interesting experience lately in the treatment of the nervous form of distemper—chorea with a normal brain emulsion.

During the time I was connected with the New York Board of Health and preparing the Pasteur treatment which the Board supplied for the prevention of rabies I occasionally took some blood from patients presenting themselves for free treatment.

On one occasion an epiplectic boy was brought to me. This boy had almost no control over the voluntary muscles, was even unable to feed himself and was a pitiable object in the extreme. The Pasteur treatment was given him and after the eleventh injection his nervous condition began to improve rapidly and he was soon entirely recovered.

I thought it was just possible that there might be some connection between the injections of the cord emulsion and the improvement of the nervous symptoms, and undertook some experiments on dogs affected with chorea, of which the following have already been carried out:

CASE 1. A bull terrier had had chorea for eight months. This was a bad case, though chiefly unilateral. He was given one injection of 4 c.c. brain emulsion and two or three days later there was a marked improvement. A second, similar injection, was given him and the following day all symptoms of chorea disappeared, and the animal has remained well since.

CASE 2. A cocker spaniel having a mild case of chorea of six months standing was given one injection of the brain emulsion and two days later had fully recovered.

CASES 3, 4, 5. These were cases of acute chorea, very severe. They all died in about a week after the treatment was commenced apparently uninfluenced by it in any way. They were given daily injections of the brain emulsion.

On autopsy extensive hemorrhages were found along the cord and on the brain. In one of these cases there was a very marked softening and even destruction of the brain substance. The autopsy plainly showed all of these cases to have been necessarily fatal.

C. A. Zell, D. M. V.

Chicago, Ill.

GRAVID UTERUS IN INGUINAL HERNIA.

I was called to treat a case of inguinal hernia in a female dog. Being unable to replace the escaped viscus by manipulation, the hernia was opened and found to consist of the gravid uterus, containing one fetus about four weeks old.

The fetus was removed from the uterus, which was carefully sutured and then replaced in the abdominal cavity without difficulty. The opening into the inguinal canal was sutured and the animal made a nice recovery.

Chicago, Ill. C. A. ZELL, D. M. V.

ARTIFICIAL INOCULATION OF RABIES.

The artificial transference of rabies with especial reference to infection of the anterior chamber of the eye.

The results show that the rabbit, dog, and sheep may be infected by this method. In rabbits and dogs the period of incubation was on the average 12 days and for sheep 11 days.—W. PFEILER AND O. KAPFBERGER, *Centralbl. f. Bakt. Orig.* 1913, Vol. 69, No. 4, pp. 260-264.

The Use of Von Pirquet Cutaneous Reaction for Detecting Tuberculosis in Experimental Animals.

It is often necessary when diagnosing tuberculosis to inoculate experimental animals with the sputum, etc., to see if the tubercle bacillus is present. With guinea pigs and rabbits this process often takes as much as six weeks. In order to shorten the time the author recommends making a v. Pirquet test on the experimental animals. The test, when properly conducted, and old tuberculin is used, will furnish satisfactory results.—E. CONRADI. *Munch. Mediz. Wochschr.* 1913, Vol. 60, No. 29, pp. 1592-1594.

POINTED OPINIONS ON LIVE TOPICS by Readers of Veterinary Medicine

It is in reports like those of this department that the current history of the progress of veterinary science is written. Are you leaving a record of your experience which will help others, as you have been aided by these and other clinical reports? If not, you are earnestly invited to contribute from your experience that this department may be of the greatest service to its readers. By so doing you will earn the thanks of the editor, the approval of the veterinary profession and the lasting gratitude of those who are aided by your suggestions.

Advertising for Veterinarians

One of the oft puzzling things which confronts the newly graduated veterinarian or the practitioner who is changing location, is the subject of advertising. If he be a competent graduate, professionally ethical, he is often in a quandary. He wishes to advertise in a manner that will not debase the profession or belittle him in the eyes of his fellow practitioners, but still recognizes the truth of the business adage, that "he who tooteth not his own horn, the same shall not be tooted."

A stranger in a strange land, oftimes, few of us can afford to sit quietly in our offices and wait for the livestock owner to discover our existence. Again, for the reasons set forth above, we can ill afford to adopt the usual glaring methods of the ordinary business man to attract the public eye.

The first thing to be considered is business cards and their distribution. During the past few years I have been taking particular notice of the professional cards put out by veterinarians, and it is remarkable how few practitioners know what is proper in this line. The card selected should be of good quality—the best that can be afforded. The first impressions of a business man are often received from his printing, and first impressions are apt to be lasting. The size of the card is largely a matter of individual preference, but it should not be too large. A card two by three and one-half inches in size is about the maximum size, and a smaller size is often better. Cards of this size are small enough to readily fit in the vest pocket or in a small memorandum book, and large enough to convey all that should be told on a card. The stock should be of good quality, and a white card with square corners is preferable.

In printing the name, the question often arises, "Shall I put it 'Dr. John Smith' or 'John Smith, D. V. M.'?" This also is a matter of individual preference. Personally, on my cards and envelope corners I use "Dr." while on my letterheads, statements and other printing I prefer my degree. If "Dr." is used it is well to signify "Graduate Veterinarian." If the degree is used the word "graduate" is, of course, unnecessary and improper.

All that should be given on a card is the name, profession, address and telephone number (office hours, if any), or if one specializes, a few words will convey that information, such as "Canine Specialist," "Hospital in Connection," etc. The efforts of some men to write a family history (so to speak), or to give a catalog of prices for professional services on a business card, is not only amusing, but bears the earmarks of quackery.

In the choice of type, any plain, clean-cut letter is appropriate, and if the work

is done in a modern, up-to-date shop, the selection had best be left with the compositor. Type as small as can be readily read should, however, be given the preference.

The same general rules that apply to card printing apply throughout to office stationery—good stock, a terse statement of the facts, and good, clean printing. A dollar saved in office stationery is usually dearly paid for in the loss of esteem of critical people.

Now as to the distribution of the cards. Your druggist will be glad to allow you to leave a few on his counter; some may be left at the livery stables or other business places, but it is a good thing and not unethical for the newly located man to call upon prospective clients during his spare time, leave a card, introduce himself, and go on. To stop long in one place is to leave an impression that your time is not valuable, while to boast of one's ability is, of course, out of the question. The mere statement, "I am Dr. Soandso; thought while I was in this part of the town I would stop in and meet you; I shall be glad to serve you in any way I can," is usually all that is required, and leaves the best impression. Another good way is to mail the cards in an envelope.

Larger display cards, seven by ten or eight by twelve inches, printed along the same lines as the business card, and tacked up in the livery stables, feed houses and other unobjectionable places, are good advertising. Statements such as "I cure lameness," etc., are not ethical, leave a bad impression, and belong to the class of advertising to be avoided by the graduate man.

Cards or folders containing "The Horse's Prayer," "The Age of a Horse," and similar articles are not objectionable if neatly printed and limited in the advertising statements. In the city this form of advertising is oftentimes valuable.

Newspaper advertising is usually the next consideration; in the city it is doubtful if the returns will warrant the practitioner's investment; but if in the country, by all means carry a "professional card" with your local newspaper or newspapers. The same copy that is on your business card is best. The country editor is a desirable man to stand in with. If you learn of any news of public interest in your work about the country, don't be afraid to tell him of it. Don't be a scandal-monger or rush your name into print at every opportunity, but the receipt of legitimate news items will make the usually overworked country editor feel good, and in return for such favors he will give you much clean, honest advertising.

The newspapers are usually glad to give space to short articles of interest regarding the health of livestock, milk and meat inspection, etc. Such articles on local subjects are the best of advertising, when signed by the veterinarian. In severe weather farmers and others may be cautioned as to the dangers of azoturia when their horses are put to work again. Hog cholera, rabies, blackleg and other epizootics might be popularly discussed. Such articles should be free from technical terms, should be explicit, short, and should wholly avoid the suggestion that the readers should employ the professional services of the writer.

I give here the contents of a circular letter which I had printed in imitation typewriter form, and which I have found to be paying advertising. Probably the form may not be suited to your individual needs, but a similar letter, mailed with a business card, generally brings results. I leave the date and the address to be filled in on the typewriter as they are mailed:

Dear Sir:—As you probably know, my veterinary office and hospital are now located at Second and Cedar streets, Kelso, in what is generally known as the Henry Hall place.

My phone number is Black 144, and I shall be very pleased to have you call me up at any time. I make no charge for such consultation, unless you wish me to furnish medicine or to write a prescription.

There are many minor injuries and slight ailments among farm animals, often of such a nature that the value of the animal does

not warrant the services of a veterinarian, and where simple household remedies are all that is required. I stand ready at all times to give advice and instruction in such cases, and you do not place yourself under any financial obligations in consulting me about them.

I desire to locate permanently in Cowlitz county, and to make friends with all owners of livestock. I treat diseases of all domestic animals, including poultry. For the examination of horses' teeth no charge is made unless work is needed, and owner wishes it done.

I am a graduate of the Kansas City Veterinary College. Should you have need of my services I will treat you fairly and honestly, making all charges as reasonable as possible.

Theater curtains, billboards, large display newspaper advertising, etc., are not for the ethical veterinarian. Yet, to me, at least, a clean statement of facts, displayed even in this manner, would be preferable to the smaller advertisements put out by some, and which contain such statements as "I cure spavin," "Let me do your dentistry," etc.

My only apology for this article is the fact that I have spent twenty years in newspaper and advertising work, previous to taking up the study of veterinary medicine, and this, I hope, will excuse any pretense by me of superior knowledge along these lines.

CLIFF. ACKLEY, D. V. M.

Kelso, Wash.

FLUSHING THE TRACHEA

This operation was mentioned by Dr. W. L. Williams a few years ago. I have used it three times and believe it is indicated in mechanical pneumonia; in fact, I know of no other line of treatment that gives as good results.

I will cite a case I had a short time ago.

A mare about six or seven years, 1,200 pounds, good condition, had colic. The owner gave her an aqueous solution of turpentine. He thought he gave it to her properly, but when he returned her to her stall she coughed several times and soon became distressed and breathed quick and hard. I arrived on the scene about two hours afterward and found her respirations were 60 and both nostrils discharging a brownish fluid, foam and blood. I told the owner that medicines would be of no use, but we would try washing the lungs, as it was a clear case of mechanical pneumonia.

I prepared two gallons of boiled water, cooled it and added two ounces of salt and the same amount of peroxide of hydrogen, and after performing tracheotomy, procured a fountain syringe, well cleansed, inserted the rubber tube a few inches into the tracheal opening, and with the aid of plenty of assistants allowed two quarts to flow down the trachea into the lungs. This seemed to fill up the lungs pretty well. Her head was then lowered until the fluid returned through her nose. This was repeated till the two gallons were used up. I had her moved to a stall alone and supplied with cold, pure air. Her respirations were then 52. I gave her Poly-Bacterins, nothing else.

Next day gave her a hypodermic injection of atropine. Respirations were then 25. The day after they dropped to 18 and every day thereafter there was a constant lowering of the number of respirations till normal was reached in five days after the attack. She would not eat, and would drink only a little water till I put her on fluidextract of nux vomica, thirty minims on tongue, three times a day. This gave her an appetite at once and she has done well ever since.

A few years ago I had a similar case. A horse with a threshing outfit was fed oats on the floor. The owner found him in a violent fit of coughing, and next day he was breathing hard and showed all the symptoms of mechanical pneumonia. While sick, he was led home, fifteen miles. I performed tracheotomy, prepared the salt and hydrogen peroxide solution and passed it into the lungs as much as he would hold. I thought I would drown him, but I found there is no danger. We lowered his head and the solution came away. More was given

him, and when about a gallon and a half had been given him there came out of his nostrils about a tablespoonful of whole oats, swollen and sour. Nothing else was done for him and he did well.

Another horse got a dose of linseed oil into his lungs. I was called out to see him, and although I flushed his lungs I felt it was useless, as he had then been sick for about thirty hours, and I believe destruction of the tissues had taken place. I do not think many practitioners make this a standard operation, but it is simple enough, efficient, and perfectly safe. Cleanliness is the first principle of surgery, and flushing the trachea is a nice surgical procedure and deserves the utmost cleanliness, and, used with judgment, will result in lasting credit to the surgeon.

T. V. SIMPSON, V. S.

Yorkton, Sask., Can.

ACONITINE AND ARECOLINE FOR LAMINITIS

About two months ago I was called to see a brown six-year-old mare weighing about sixteen hundred (1600) pounds, suffering from laminitis subsequent to foaling. Upon examination I found a temperature of 105° F., respirations 24, pulse about 50. There was also a septic condition of the uterus as part of the placenta was retained.

Treatment.—I began giving aconitine, gr. 1-72, every 15 minutes, keeping patient well wrapped. Also gave in all two and one-half grains arecoline with strychnine, which brought about very free catharsis. I had feet soaked, two hours daily, in hot water. Two 60-grain tablets potassium nitrate were given three times daily, when I could not be present. This seemed to control the fever admirably, and, of course, acted as an eliminant.

For the septic uterus I gave douches of potassium permanganate every three days. This was a serious case but it made a satisfactory recovery.

J. R. RITCHIE, D. V. S.

Watkins, Montana.

INTRADERMAL TUBERCULIN TESTING IN HOGS

The reliability of the intradermal tuberculin test in cattle is no longer questioned by those who have had the opportunity to conduct this test. The tuberculin testing of hogs was rather unsatisfactory until the advent of the intradermal method. By the proper application the intradermal testing of hogs this method has been found quite reliable.

The technic of the test may be of interest at this time, particularly to the serum producers, who, in accordance with the Bureau regulations, are required to tuberculin test hogs used in the production of serum.

Hogs are usually easily injected by providing first a chute sufficiently narrow that the hogs cannot turn, and of sufficient height that is easy for the manipulator to reach the point of operation. As they should be, free from mud and filth, no antiseptic application is necessary prior to the application of the tuberculin. If the animals have mud and filth on the ears, this should be removed and the parts cleansed thoroughly. The type of syringe used will necessarily vary in accordance with the operator's desire. A 2cc. syringe with glass barrel is sufficiently large and is easily manipulated. The screw needle is probably to be preferred and one that has a reinforced shoulder and a point not to exceed *one-eighth* of an inch in length. The site of injection is ordinarily about one-half inch from the base and about midway from the anterior-superior and the posterior-inferior margin, injecting the material in the skin, sufficient tuberculin being used that it will form a small elevation or swelling. This quantity usually ranges from three to seven minims.

The inspection for reactors should be made not earlier than 48 hours after the injection of the tuberculin and preferably should be 72 hours after the tuberculination. Reactors will be evidenced by a swelling varying in size from a half-inch in diameter to an inch and a half in

diameter, and probably one-half inch in thickness. The swelling is rather dense and hard and will persist for three or four days or even a week after it makes its appearance. Usually the central part of the swelling becomes necrotic and sloughs in from five to seven days after the reaction begins. In nontubercular animals there will be no tumefaction.

The tuberculin used in this test is the ordinary tuberculin, or like that used in subcutaneous tuberculin testing of cattle.

A. T. KINSLEY, M. Sc., D. V. S.,
Pathologist, Kansas City Veterinary College.
Kansas City, Mo.

THE "AIR TREATMENT" FOR BOVINE IMPACTION

In placing stress upon a subject matter, relative to some special cases of bovine impaction, I do not do so because I think I have something new or original, but because it is seldom spoken of in our journals.

To illustrate, one morning, several years ago, I received an urgent call from farmer, stating that on the previous day (in September) his cows got into a patch of ripe millet and from there into the green corn and that he had five very sick cows. On arriving, I found four of them bound up; as he expressed it, "tighter than a wedge."

After giving these four magnesium sulphate and stimulants, I turned my attention to the other one and found she was purging, not from superpurgation, as the result of a physic, but from the fermentation of food taken the previous day. The diarrhea was not in the least alarming and the pain and distress and loaded paunch were not so great as the others, but there seemed to be an overwhelming of the nerve centers and a state of apathy and stupor due to some toxic disturbance other than the symptoms and conditions mentioned above.

To this patient I gave a laxative and oil, diffusible stimulants and intestinal antiseptics. She grew worse and became unable to rise, and by a differential diagnosis, I entertained the idea of the symptoms of the beginning of a typical case of parturient paresis, save the purging.

The air treatment for milk fever had just come into use, and I inflated the udder and continued the strychnine with the same gratifying results as in parturient paresis.

Since that time, I have had just such cases, following engorgement in the female subjects which yielded to the same kind of treatment.

In my practice of eighteen years, I am inclined to the conclusion in such cases as septic metritis, septicemia, puerperal fevers, purging from engorgement, etc., wherein lactation is suddenly checked, that the morbid conditions may be accompanied by toxins or disturbances in the flaccid udder similar (pathologically) to parturient paresis and demanding the same treatment.

Another recent case, a half-breed Jersey cow, noted for her milking qualities and in the fourth month of pregnancy, got to some chop one night and refused food the next day.

On the following day, she was slightly purging from the engorgement when I arrived. There was some muscular weakness shown while walking, but was inclined to eat a little hay. I left some medicine and told him to watch her, and if she got weaker to let me know. That evening, before going to bed, he took a look at her and she was mincing at hay, and in the morning he went to the barn and found her "dead as a hammer."

I regret that I did not give the air treatment. I wish to state that I do not find the profound stupor and nerve disorder in the male subjects in cases accompanied with purging from engorgement, and in every case in the female subjects where I gave the air treatment, it was shortly followed by a picking up of the ears, a bright look from the eyes, and an expression of the countenance which seemed to tell that something was doing. However, no harm seems to be

done by the use of the air treatment if aseptically carried out.

E. E. Hobbs, V. S.
Holton, Kan.

DEATH DUE TO MELANOSIS

Subject.—A gray mare aged about twelve years.

History.—The mare had been running in a paddock, turned out for the winter, and each night stabled, fed hay and grain. Just a week before I was called, the barn man on putting the horses away thought that he noticed that she did not walk as she should and thought her a little stiff, but paid little attention to it. On the morning following he noticed her more closely and was sure that she was wrong. A call was sent in for me, and being out of town at the time, another veterinarian was called.

At this time she was very stiff in movement and apparently could not control the hind-quarters; she was up, ate well and seemed in no pain. I was told later that the diagnosis was "a wrench, or sprain over the loins, that in some way or other interfered with the animal's motion." On the second call the animal was down, unable to get up, and I was told that the doctor had come to the conclusion that it was paralysis due to some hurt, and that he was unable to do anything with her.

At this time I was again called. I found the mare down, lying board-sided on the floor; pulse good; temperature 100° F. On taking a hold of the halter strap she would raise up on the sternum, and later she got up on the front feet but had no power to raise the hind-quarters from the floor. I could not detect any pain on pressure, so took a pin and used this on the legs and hips; she gave no signs of having any feeling at any point from the lumbar vertebra back.

On closer examination of the mare I noticed quite a number of small melonotic tumors on the underside of the tail and some on the mammary glands. Also quite a noticeable enlargement on the right shoulder involving the parts from a point about where the collar would go on the neck back to where the saddle of the harness would cross the back. This was supposed to be a fistula developing. I was told that the driver of this mare had noticed this lump coming since some time in July and told the owner that he would soon have a good big fistula if something was not done for it. On examination of this bunch I could not detect any pus formation and told the owner that I thought this was also melanosis or melanotic.

Prognosis.—Nothing doing in this case and recommended the destruction of the animal. This was objected to and she was left to die, which she did five days later.

Autopsy.—On removing the skin, the small tumors of the tail came away with the hide. The bunch on the shoulder proved to be a melanotic tumor, involving the parts mentioned and went down back of the shoulder to a point level with the shoulder point. This tumor was not weighed so I have no idea of the weight. It could not have been put into a half-bushel measure so this will give some idea of the size of it.

On opening the abdominal cavity it was a sight to see, all through the messantry were small melanotic tumors from the size of a navy bean to that of one's fist. The liver was one mass of tumors and one of the lobes was a solid tumor. In the thoracic cavity numerous tumors were found and one especially large one was found right over the aorta where it leaves the heart. This was about the size of a hen's egg. The space just under the sacrum and in the abdominal cavity was one mass of tumors, all sizes from that of a small marble to that of a hen's egg. On opening the sacrum one could see the black infiltration through each of the bones, causing them to have a black color through the entire bone. No bruise of any part of the loins could be seen after the skin had been removed. And from all the diseased parts in this animal I am

sure that this was a case of paralysis due to tumors pressing on the spinal cord.

The only reason for writing up this case is this: I have never seen a case of this kind where so few tumors showed on the external surface of the animal, and yet present the internal conditions that we had in this instance. In almost all of the cases we come cross we will find tumors on the tail and the mammary glands and sheath of the animal ranging from a small lump to that the size of a peck measure.

D. O. KNISELY, D. V. S.

Topeka, Kan.

A VIEW OF WHITE DIARRHEA OF CHICKS.

Our unwillingness to believe things, which on the surface appear to be facts, leads us into new fields of research. The theory that white diarrhea is propagated by infection of the ovaries of the mother hen, has many believers. Questioning the possible accuracy of that theory and knowing from experience that a belief in that theory does not meet the situation which poultry raisers are confronted with, I realized the necessity for the conducting of experiments which would be of practical value to poultry raisers, and avoid, if possible, the forty per cent of loss which has resulted where white diarrhea is found in the chicks.

I had already completely demonstrated through careful experiments that I could reduce the mortality from over forty per cent to less than ten per cent. It was my desire to save the remaining ten per cent which prompted the experiments which have produced such definite results as to be practically incontrovertible. Certain things in the conduct of my investigations—which have covered a period of four years—pointed to the important fact that all chicks hatched, when taken from the nest, and specimens taken at random from different clutches at twenty-four hours of age, seemed strong and vigorous. When dissected and examined under the microscope, they showed no trace whatever of the scourge. Such chicks could hardly be said to harbor an infection from the ovary of the mother hen. To further demonstrate my firm conviction that white diarrhea is an acquired disease, the infection of which is received from the second to the tenth day of the chick's life, I built in the loft of one of my buildings thirty feet from the ground a sort of sun parlor, a room twelve feet square covered with glass. This room was carefully prepared, everything white-washed, even the floor. Coarse sand was brought in, sprinkled on the floor and sprayed with a weak carbolic solution. Three chicks from each of four different clutches were placed in this room, fed and watered under highly sanitary conditions. They continued strong and vigorous, grew nicely and at eight weeks the twelve were removed to the ground, and all were strong, vigorous chicks. The balance of the four clutches were allowed to run in a small enclosure on the ground where a small percentage of the flock had died from white diarrhea the year before. There were thirty-one chicks in this bunch and all but one were dead on the 14th day. This one chick seemed to be able to resist the disease and is still living.

Surely it must be clear than sanitation is the important, yes, absolutely necessary feature, sanitation as to food, drink and surroundings.

While for three years past, I have been very successful in preventing white diarrhea by the use of a solution of Chinosol (1:2000) as their only drink, I have determined from my exhaustive experiments this season that it is quite possible to save practically all of the chicks. This covers the ten per cent, which I had not previously saved and which prompted my long continued and active experiments. I have satisfied myself that white diar-

rhea is a disease acquired wholly through food and drink and I find that it is quite as essential to know that the food does not carry the germs as it is to know that the drink is not contaminated, therefore I began this season treating all food with Chinosol, the treatment being as follows:

I use ordinary commercial chick feed, I take sufficient for one day's feed and cover it with a 1:2000 Chinosol solution, letting it stand in this solution two or three minutes. I carefully drain off the solution and spread the feed on canvas drying frames. I prepare this feed one day ahead, which insures sufficient time for it to dry out. The drink that I give to the chicks is Chinosol solution 1:2000.

During the course of my experiments, which have extended over four years, I have vainly sought for something that would arrest the disease and bring the chick back after it had reached the stage where the appendix had become greatly enlarged, but have never been able to save a single chick. Thus it is apparent that we must prevent the disease, and we certainly can prevent it if both the food and drink are treated in the way that I describe.

An explanation as to the possible contamination of the food may be found in the fact that the corn crop of this country is so immense, that we do not enjoy the proper facilities for either the handling or the curing of it. The great bulk of the corn crop becomes more or less mouldy before reaching the hands of the consumer, even thought much of it is run through machines that brush it and blow out most of the mould, and even though in some instances it is kiln dried and bleached, there is much of it which reaches the consumer in an insanitary condition. This probably is the primary cause for white diarrhea. Even if you rid your ranch of the germs this year, the chicks may at any time become infected if the feed is not properly treated.

While it may be an interesting controversy as to whether the ovaries of the mother hen are or are not contaminated, the determining of that point does not actually control the life of the young chicks. The fact that I have determined through actual careful experiments that practically all of the chicks can be saved, is a matter of vital moment to those who are interested in chicken raising.

The point of vital interest to poultry raisers is this: Can the frightful mortality, due to white diarrhea, be wiped out? My answer is, yes, provided there is strict compliance with the procedure that I have outlined.

H. B. Gleezen.

Georgetown, Mass.

A PECULIAR CASE OF "FORAGE POISONING"

A two-year-old colt, in fairly good condition, had received grain, timothy hay, and straw through the winter, was turned into pasture with another colt about the middle of April. The pasture was rather scant, being timothy and clover, and contained an old stack of timothy and alsike, at which the colts had been feeding, at places having eaten into the stack some considerable distance, probably after the clover.

On May 2nd he was noticed wandering about the pasture, rubbing his head and nose on the trees and ground; gait rather staggery, eyes bloodshot and swollen. He persisted in rubbing the head and nose as though it itched intensely, until it was raw and bleeding. Patches of skin on each side of the head, the size of a man's hand, being rubbed bare. These patches were dark colored. Around the edges of these patches the healthy skin had separated and a bloody serum exuded. Two patches of skin on each side of the nose were also necrotic. Temperature 102° F., pulse 70. The entire head scratched and bleeding in numerous places.

I washed and cleansed the head with

a creolin solution and applied carbolized sweet oil, leaving a quantity of the same to be applied once a day. I also administered internally oleum lini, one and one-half pints.

On May 8th the owner reported the colt eating fairly well, but a little weak and dumpy. The feces had been rather dry and dark colored at first, but was about normal at this time. The dead skin had fallen off the nose and face, leaving the surface looking healthy.

I prescribed drying powder and carbolized oil alternately as a dressing for the head, had him turned into the orchard where there was some blue grass, stabled and fed grain at nights.

I did not see or hear from the colt again until May 29th, when I was called and found him greatly emaciated, with a profuse diarrhea of about two weeks' duration. He was down and too weak to get up, or stand when helped up. The owner stated he had been eating until the day before, though not so hearty the past few days. Pulse very weak, temperature 96° F., mucous membrane livid. I gave no treatment, and made unfavorable prognosis. The colt died that night.

Autopsy revealed the stomach and intestinal mucosa as far back as the floating colon very much thickened and ulcerated, of a dark greenish color. The walls of the duodenum being one to one and one-half inches thick and gangrenous in places. The liver showing marked hepatitis, very much enlarged, of a yellowish brown cast, and very friable.

The pancreas attracted my attention particularly, being very much enlarged, indurated and fibrous, so much so it was hard to cut with a sharp knife. The ducts filled with a dense mucous of a grayish cast, and mucous cysts existing throughout the mass.

The spleen was not materially altered; kidneys slightly congested; mesenteric lymphatics enlarged and inflamed. Other internal organs not materially altered.

REMOVAL OF CYSTIC CALCULI FROM A MULE

On March 25th, 1913, I was called to see a five year old mule, gelding.

History—The mule had been ailing for several weeks; at this time he was unable to micturate, but made very frequent attempts to do so. A local veterinarian had been treating the animal for three or four weeks, without improvement. By watching the actions of the animal for a few moments, I could see he was very much distressed.

The owner asked me to relieve the animal temporarily so that he might get rid of him. I told him that if I could relieve him at all, the relief would be permanent.

On examination of the bladder per rectum, I could locate six distinct deposits within it.

The animal was given one gr. of H. M. C., Formula B, hypodermically, in twenty minutes he was led into a chute for roaching, and beneath him to prevent his lying down, were placed two wide planks. A bar was inserted close above the hocks and he was tied firmly to either side of the chute.

I cleaned the field of operation, passed the catheter, and made the incision one and three-fourths inches long and about three and one half inches below the anus. With left hand in the rectum to place the stones in position and with long forceps in the right hand (slowly dilating the sphincter muscle) I grasped the calculi in the bladder with the forceps and slowly removed them, one by one.

I treated the incision as an open wound, in fifteen days complete closure had occurred and the urine passed through the natural channel.

Thirty-five days after the operation, the animal sold for a good price. I charged a good fee for the operation but the owner was well satisfied, and has been an effective medium for advertising for me ever since.

I have performed this operation with the animal standing, also by casting the animal. I much prefer the former position.

H. J. McCartney, D. V. S.
Joplin, Mo.

LAMINITIS DUE TO A RARE CAUSE

November 11th, I was called by a groceryman to see a pair of ponies weighing about 600 pounds each. I found they were suffering from an acute attack of laminitis with symptoms plain and pronounced. On questioning the owner as to feed, work and water, and being assured by him that they had not been worked for ten days and had been running in a small lot daily and stabled at night and no change of feed, the case had me guessing as to cause. However, as I was anxious to give owner a reason for my diagnosis I made a careful search of the lot and found a quantity of empty macaroni boxes in a wagon box in one corner of the lot; as horse tracks were plentiful, I told him macaroni was the cause. He then remembered bringing home some macaroni that was damaged.

Treatment consisted in giving each pony an aloes ball, removing front shoes and soaking feet in water; after twenty-four hours as there was very little peristaltic action and no appetite I gave each of them one-third of a grain of arecoline hydrobromide, subcutaneously, which emptied the intestinal tract within an hour. Both were discharged cured the 16th.

I give this case on account of its being the first case of forage poisoning I have ever had due to eating macaroni and to emphasize that when one is in doubt as to the cause of an ailment he should keep asking questions and looking around trying to find the facts that will confirm his diagnosis.

H. T. Farmer, D. V. S.
South Boston, Va.

SOME VERMINOUS PARASITES OF SOLIPEDS

(*Continued on page 166.*)

in which vaginal tunica or eye are affected, may be relieved by operation.

The Taeniae.

Taeniasis of solipeds in this section of the country is very uncommon. One farm only in Missouri has been identified as containing animals harboring tape worms.

Strongylus Arnfieldi or Lung Worm.

This parasite is not generally prevalent in any portion of the United States. It is destroyed external to the host in a very short time by exposure to wet or damp environments, and since practically the entire Mississippi Valley is amply supplied with moisture, it would be rather exceptional to find this parasite in sufficient numbers to cause alarm.

The adults are found in the bronchial tubes and bronchioles, the ova and embryos being discharged in the excretions from the bronchial tubes. They gain entrance into the host by the feeding of contaminated food stuff and water, or by inhalation. The exact manner in which those that are ingested reach the bronchial tubes has not been positively determined. The adults are blood suckers and occasion an inflammation which is associated with an accumulation of muco-purulent substance in the bronchial tubes and bronchioles, which in turn favors infection resulting in catarrhal inflammation and in some instances the occlusion of the bronchioles and collapse of the air cells.

The symptoms in the initial stages of the disease consist of an occasional cough. As the parasites become more numerous the cough becomes more frequent and is of a paroxysmal character. The animal frequently coughs until it falls to the ground exhausted. Emaciation is rather rapid, the animals become weak, depressed and die. If the discharge from the nose is examined it will be found to contain disintegrated

adult parasites, many ova and an occasional embryo.

Prevention consists in the quarantining of the affected animals, keeping the premises free from dust by frequently sprinkling with a parasiticide, and giving the animals clean, wholesome food and water. The treatment consists in the application of volatile drugs that may be inhaled by the animal and which will facilitate removal of the bronchial contents and will destroy the parasite, as oil of eucalyptus, iodine and turpentine. Medicaments may be introduced either in the form of a spray or vapor.

WHEN IN DOUBT USE SODIUM CACODYLATE

On October 18, 1913, was called see a coming two-year-old colt with the history that it had been at pasture during the summer and was in prime condition until a few days previous to my visit.

I found an anemic, emaciated, weak, debilitated colt. The mucous membranes were pale; the heart action sluggish; the coat very rough, with skin eruptions which caused extreme itching. Temperature 103° F., respiration practically normal, pulse soft and weak, appetite perverted.

I concluded the colt was suffering from acute gastrointestinal catarrh with subsequent lack of proper digestion and assimilation of food, probably the latter causing the eczematous skin troubles.

Treatment consisted in administering a purgative, followed with sulpho-carbolates (Abbott), digestive correctives as iron, strychnine, gentian, etc.; bacterin injections, local ointments to relieve itching and being very careful as to amount and nature of the diet. The colt improved in every respect for a period of ten days; then followed a change for the worse and it is no better at present.

Will some more fortunate reader give, through the journal, diagnosis and treatment? Also a discussion of my treatment.

R. E. BAUCH, D. V. S.

Dallas City, Ill.

PROTECTIVE (DEFENSIVE) FERMENTS AND THE SERODIAGNOSIS OF PREGNANCY

(*Continued from page* 150.)

the thimble. Under no circumstances allow any of the egg white to come in contact with the upper rim or the outside walls of the thimble. If this occurs the results will be wrong. In order to be absolutely sure that no contamination of the outside with egg white or any other substance giving a

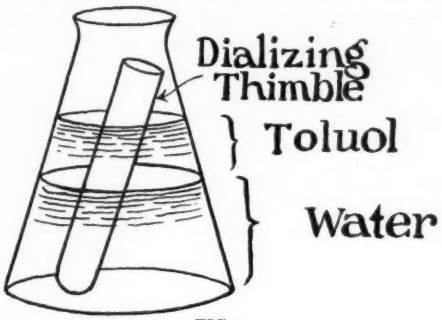

FIG. 1

reaction with the ninhydrin (see above,) or the biuret test, has taken place, it is advisable to submit the thimble to a washing process. This is done by grasping the uppermost part of the thimble with the bacteriologically clean index finger and thumb (the use of a flat, noncorrugated, good appositioned pincette is more advisable) and rinse the outside of the thimble with clean running water. Next, seal the thimble in the same manner with the fingers midway between the top and bottom, and allow water to flow into the upper part of the thimble. If the fingers are now moved toward the top of the thimble without releasing the seal, the contained and adherent water may be stripped from the thimble. No water must be allowed to flow into the egg white during the operation.

The thimble is now placed in another Erlenmeyer flask,—not the one previously used in charging the thimble with egg white—which contains 20 cc. of water. Then add a

layer, (½ cm. high) of toluol upon the water in the flask and a similar amount is placed on the contents in the thimble. The flask is now covered with a glass plate and allowed to stand at room temperature, or in an incubator (thermostat) for about 16 hours. The test is now made for substances which may have passed through the pores of the thimble into the outer fluid. These substances are termed collectively the dialyzate. For conducting the test 10 cc. of the aqueos fluid—not toluol—is withdrawn with a sterile pipette and placed in a test tube. Care must be exercised that no saliva runs into the pipette during the operation. Now add 2.5 cc. of 33 per cent sodium hydroxid solution, mix by moving the tube to and fro, and allow 1 cc. of a 1 to 500 copper sulphate solution to trickle slowly down the side (inner wall) of the tube so as to have a layer of the reagent (copper sulphate) upon the dialyzate. *If the thimble is not proof against the passage of egg white, a violet to a pink coloration is noted at the juncture of the two fluids in the test tube. If a coloration is obtained, and the test was properly conducted, the thimble cannot be used for this work.*

(To be Continued.)

CORRECTIONS FOR PORTION OF ARTICLE ON "SERO-DIAGNOSIS OF PREGNANCY" PUBLISHED IN FEBRUARY ISSUE.

Page 79, *second column, in line* 14, *omit words "in furnishing," and in line* 22 *remove comma following the word "hydrogen," and place it after "ammonia."*

Page 80, *first column, in line* 21, *"trosin" should be "tyrosin"; in line* 26 *"carboxylic" should read "carbocyclic," and in line* 27 *use "heterocyclic" instead of "heteroxylic."*

Page 96, *column* 2, *line* 12, *"discerent" should read "differential."*

CHOOSING A LOCATION AND CULTIVATING IT

(*Continued from page* 180.)

the poultry industry of the United States in dollars and cents is greater than the value of the wheat crop—nearly twice as great as the value of the hogs sold in any given year. In fact, the poultry industry is one of the leading "live stock" industries of the country and its losses from disease are exceedingly large.

The loss of chickens from white diarrhea is estimated at from ten to fifty per cent of all the birds hatched. The loss from roup is enormous, while the loss of birds, and the loss of condition of the birds that survive from external parasites is a matter of great importance to the poultry industry. These losses are preventable easily yet they are practically ignored by veterinarians.

Ten years ago most veterinarians thought that swine practice held nothing for them, but now they look upon the matter in a different light and there are not a few with whom swine practice amounts to more than their practice with all other domestic animals.

Veterinarians should awaken to the possibilities which poultry practice offers. Its development during the next ten years may rival that of swine practice during the past ten years, if it is but properly cultivated, and the first step in its cultivation is the preparation to do good work—the study of poultry pathology.

The article in this issue by Doctor Ackley on Veterinary advertising is likewise intended chiefly for Veterinarians who are just beginning practice.

Personal Mention

Dr. Geo. H. Daughtrey, of Arcanum, Ohio, died of lobar pneumonia, recently.

The federal meat inspectors found 17,000 cases of measles in sheep during the past year.

Dr. Hubert Von Gorres, practitioner of veterinary medicine in Fargo, N. D., since 1888, died recently.

Dr. James M. Wilson, a veterinarian of Batavia, New York, died recently of the infirmities of age. Doctor Wilson was eighty-five years old.

Dr. T. H. Unger died recently at his home in Cedar Rapids. The doctor was a sufferer from cancer, which caused his death. He leaves a widow and two daughters.

Dr. Walter Bowman, of Pleasant Hill, Ill., died February 1st of tetanus.

Doctor Bowman was thrown from his automobile and received a number of skin abrasions, on his return from a call to dress the wounds of a horse suffering from tetanus. It is supposed that this was the source of his infection.

Attention is called to the advertisement of Bethune's Hoof Ointment elsewhere in this issue. Through an error a wrong price was given for this ointment in the January issue. It will be noted that the prices have been greatly reduced to veterinarians, to whom the manufacturer reports that his sales have been exceedingly large.

Dr. W. L. Beaver died in a hospital at Washington, Pa., February 8th, of actinomycosis.

The doctor had been suffering from the disease for some weeks and had been under the care of three physicians, yet his true condition was diagnosed only a few hours before his death.

The Michigan Veterinary Medical Association held its Thirty-first Semi-annual meeting at Lansing, on February 3rd and 4th. About sixty members were present. The program consisted of a series of committee reports, including a report on "Intelligence and Education," by Dr. R. P. Lyman, Dean of Veterinary Division of the Michigan Agricultural College; a report on "Disease," by Dr. Ward Giltner, Bacteriologist to the Michigan Agricultural Experimental Station; a report on "Legislation," by Dr. A. McKercher.

A banquet was held the evening of the first day of the meeting at which the chief speaker was Dr. Nelson S. Mayo, of Chicago, Secretary of the A. V. M. A., former secretary of the Michigan Veterinary Medical Association, and former member of the faculty of the Michigan Agricultural College.

Doctor Mayo spoke on veterinary training and its relation to the education of the public. He said in part:

"The veterinary surgeon must be the leader in his community in connection with educating it to the progress of agricultural affairs. Training is essential. The best training would be a course in an agricultural college in which the student would learn the natural sciences. Then let that be followed up by a good technical training."

The next meeting will be held in Detroit in July. The election of officers resulted in the selection of Dr. A. McKercher as President and Dr. Wm. A. Wall, Secretary and Treasurer.

Dr. Frank Jelen has been promoted to the position, Inspector in Charge, of the Federal Meat Inspection, at Cedar Rapids, Iowa.

Notice to Those Placing Advance Orders for *"Colics and Their Treatment"*

This book has been unavoidably delayed in publication. We were not able to fill the advance orders March first as we expected. The book will be better for the delay and will be well worth waiting for. It will be ready soon and all orders for it will be filled in the order in which they were received.

American Journal of Veterinary Medicine

Evanston, Illinois

Dr. Edward A. Cahill, of Canonsburg, Pa., has accepted a position with the state of Massachusetts, and has sold his practice to Dr. Moore B. Herron, formerly of Venetia.

Dr. N. C. Sorensen, until recently Inspector in Charge of the Federal Meat Inspection Cedar Rapids, Iowa, has been transferred to Terre Haute, Indiana, where he succeeds Inspector in Charge Dr. H. M. Newton.

The State Board of Agriculture of Rhode Island, at the instigation of the State Veterinarian, John S. Pollard, has issued and adopted regulations for the importation of horse kind into the state, that provides for an ophthalmic mallein test for animals from Massachusetts, New York, Indiana and Connecticut.

W. B. Saunders Company, publishers, of Philadelphia and London, have just issued an entirely new eighty-eight page illustrated catalogue of their publications. As great care has evidently been taken in its production as in the manufacture of their books. It is an extremely handsome catalogue. It is a descriptive catalogue in the truest sense, telling you just what you will find in their books and showing you by specimen cuts, the type of illustrations used. It is really an index to modern medical literature, describing some 250 books, including 30 new books and new editions.

A postal sent to W. B. Saunders Company, Philadelphia, will bring you a copy—and you should have one.

The annual meeting of the Ohio Valley Veterinary Association was held in the Terre Haute Veterinary College February 3rd and 4th. The meeting was well attended and an unusually interesting program rendered. The number of cases offered in the clinic was large, more than there was time for.

Considerable interest was shown in the specimens of pathologic tissue exhibited by the college. These specimens were prepared by Dr. S. V. Ramsey, Jr., who uses sodium salicylate instead of pitch or asphalt to cement the watch crystal to the plate, claiming to get much better results from this than by the old method.

Among the papers of particular interest were: "Diseases of the Foot," by Dr. L. A. Greiner, Indianapolis; "Hog Cholera," Dr. C. F. Lynch, Terre Haute; "Milk as a Common Carrier of Diseases," Dr. Henry Wash-

DIGALEN VETERINARY

HYPODERMIC TABLETS

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A VALUABLE AID IN

PNEUMONIA, INFECTIOUS DISEASES, AZOTURIA

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Carry it in your bag and be prepared for the emergencies of the WINTER SEASON

THE HOFFMANN-LA ROCHE CHEMICAL WORKS

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burn, Clinton, Indiana; "Black Leg," Dr. W. H. Weathers, Hennepin, Illinois; "Parasitology," Dr. T. A. Sigler, Greencastle, Indiana. Dr. George R. White, of Nashville, Tenn., gave a stereopticon lecture, showing methods of handling infectious diseases.

The clinic included operations for poll evil, by Dr. Weathers, Hennepin, Ill.; a roarer operation, by Dr. B. L. Strohl, Oblong, Illinois; a roarer operation by R. J. Morris, of the College; a demonstration on the treatment of bone spavin, by the puncture-fire method, by Dr. George R. White, of Nashville, Tenn.; the quittor operation by Dr. C. I. Fleming, of the college; an operation for string halt by Dr. L. E. Greiner, of Indianapolis, and several operations on dogs, by the various members.

As a conclusion of the clinic Dr. Geo. R. White, of Nashville, demonstrated the removal of the crow from a rooster.

CHANGES IN FEDERAL LIST OF VETERINARIANS.

The following changes have been made in the list of practicing veterinarians registered by the bureau and authorized to inspect and test with mallein horses, mules and asses intended for export to Canada:

Name Added to List.

Dr. C. L. Gamrath, 52 East Washington Street, Fairfield, Iowa.

Names Removed from the List.

Dr. McKeen Boyce, Cottonwood, Idaho.
Dr. C. H. Fauks, Frazee, Minn.
Dr. J. F. Morel, Corvallis, Ore.
Dr. M. F. Leffingswell, Austin, Minn.
Dr. P. E. Bailey, St. Paul, Minn.
Dr. F. F. Brown, Kansas City, Mo.
Dr. Charles H. Cook, Rochester, N. Y.
Dr. J. G. Ferneyhough, Burkeville, Va.
Dr. C. I. Fleming, Terre Haute, Ind.
Dr. A. L. Haggerty, Coldwater, Mich.
Dr. A. D. Howden, Caribou, Me.
Dr. J. D. Inger, Waverly, Iowa.
Dr. J. E. King, Kansas City, Mo.
Dr. S. H. Kinery, Creston, Iowa.
Dr. Paul O. Koto, Forest City, Iowa.
Dr. R. M. MacDonald, South Bend, Ind.
Dr. Peter McCollum, Niagara Falls, N. Y.
Dr. Alfred L. Murch, Bangor, Me.
Dr. C. E. Pickering, Kent, Wash.
Dr. J. F. Planz, Akron, Ohio.
Dr. E. N. Nettleton, Chicago, Ill.
Dr. Charles H. Schultz, Seattle, Wash.
Dr. David C. Scott, Omaha, Nebr.
Dr. L. D. Whitwood, Jefferson, Ohio.

Change of Address.

Dr. O. C. Selby, from Edgemont, S. Dak., to Rapid City, S. Dak.

An Attractive Offer

Until April 1st only, we will furnish superior Nuclein Solution (Abbott) for $2.92 per pint. This is a special price to enable you to become familiar with this valuable reconstructive agent. Indicated in pneumonia, influenza and all debilitated conditions.

25% Discount

on our concentrated highly potent

Tetanus Antitoxin

New Treatment for Contagious Abortion

Methylene Blue Tablet

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Seattle San Francisco Los Angeles Bombay Toronto

He Has a Kick Coming

I would like comment on the foolish laws of various states in the union, which discriminate against their own citizens.

A veterinarian in one state is barred from earning his living in another state. He is a moral citizen in one state, he is an out-law in an adjoining state. The sooner we abolish such ignorance the better it will be for one and all. As such laws breed contempt and hatred among its people. We are all under the one flag, people call this a free country, such a term is only a joke, as we are well supplied with petty politicians, who make laws and do not know what great hardships they leave on the people.

My argument is: A veterinarian from a proper veterinary school, is entitled to go in any state and earn his living. He may register in the county in which he is practicing. He should not go and take another examination from a so-called State Board. If he does not answer some of those ridiculous questions they will pluck him.

When a man gets along in years it is a very hard matter for him to plug up on such

Notice

¶ The prices of Bethune's Hoof Ointment, given in our January issue, were wrong. The correct prices are:

One Quart Can $1.00 Half Gallon Can $2.00

Gallon Can $3.00 2 and 5 Gallon Cans at $2.50 per gallon

ONCE MORE
THERAPOGEN

BETTER AND SWEETER THAN ALL OTHER DISINFECTANTS

For asepticizing the site of operation; for dressing wounds after operating; for cuts, lacerations, nail punctures, etc.; for disinfecting hands or instruments; for the obstetrist especially in removal of afterbirth, and in foetal discharges.

Dr. Edgar W. Powell, Bryn Mawr, Pa., writes: I am very glad to receive your letter, stating that we can again procure Therapogen. I used it as long as I could get it, and Dr. Adams and I wrote to nearly every wholesale druggist in Philadelphia, New York, Boston, etc., that we thought might be able to furnish it. * * *

I think it far surpasses any other disinfectant for use in serous or mucous cavities, catarrhal conditions, etc., and I wish you would send me a gallon at your earliest convenience.

Dr. H. Dunbar Martien, West Philadelphia, writes: Enclosed please find check for one gallon of Therapogen, which I have used for a long time and am glad to know I can again obtain it, as it is too good a preparation for any veterinarian to be without.

Appreciations like the above are coming in all the time.

THE GREAT DIFFERENCE

THERAPOGEN builds up tissues, has an exceptionally sweet odor, and is beneficial even to hands and instruments.

ALL THE OLDER DISINFECTANTS destroy tissue, because they are too violent, they SMELL HORRID and injure hands or instruments!

THEODORE MEYER

Sole Maker for the United States. **CHEMIST** **528 Locust St., Phila.**

subjects. No man feels this hardship only when he is caught in a trap by an ignorant law.

I will cite a few cases of jealousy in regard to so-called veterinarians. This one is of Dr. Chamberlin. In all my experience, I have been connected with veterinary medicine for 25 years in San Francisco, and in the east.

Dr. Chamberlin is a true gentleman. If we only had men like him in the business and less bums we would be respected by the public. Dr. Chamberlin was cut out more for a preacher than a horse doctor. As he has that gentleness and air of refinement about him. He comes from the best of stock. He is a graduate of the Ontario Veterinary College, class of 1901. He has been working for various veterinarians ever since.

He started in for himself last June, 1913. He was not in business but a month when he was dragged into court in New York city. He got off with a suspended sentence by having a good lawyer. The penalty for

the first offense is $250.00 fine or thirty days in jail, for not being registered; he cannot register under the law. I thought he was going to get the electric chair. The judges told him under no consideration must he practice or they would put him in jail. They practically barred him from making a living. His 15 years of hard labor is lost. I would like to ask, is that just to bar a good practical surgeon and have the country overrun by quacks? That is a beautiful law.

The next case on the docket was that of Dr. W. P. Grimes. He has been practicing veterinary medicine since 1888, in California and in the east. He entered the New York College of Veterinary Surgeons in 1893. At that time there was no State Board or regents, and the term was two years but he took the three-year course. Through ill health and financial circumstances he did not graduate until 1898. One year after the new law came into effect. He is registered in the state of New Jersey and is a resident of said state. He happened to open an office in the city of New York right across the river. It was not long before he was hauled into the Court of Special Sessions. He was barred from maintaining an office and practicing in New York. That shows you what ridiculous laws we have in this country. To

A New Edition of the Standard Work for Horseshoers and Veterinarians

New Eleventh Edition Revised and Partly Rewritten

By JOHN W. ADAMS, A. B., V. M. D.

Professor of Surgery and Obstetrics, and Lecturer on Shoeing in the Veterinary School, University of Pennsylvania

A TEXT-BOOK OF HORSESHOEING

For Horseshoers and Veterinarians

By A. LUNGWITZ

229 Illustrations. 8vo. Cloth, $2.00 net

SINCE the publication in 1904 of the translation of the tenth German edition of this work, Prof. Anton Lungwitz, the author, having reached the age of retirement, expressed a desire that the translator assume entire responsibility for future editions. The new eleventh edition has therefore been entirely prepared by Prof. Adams. To note the progress of farriery during the past ten years many chapters have been revised, necessitating resetting, and 61 new illustrations have been added and many redrawn. The work has long been a standard text-book for students of Veterinary Medicine and for farriers who wish to pass qualifying examinations or for other reasons desire to perfect themselves in their work. This new American edition brings the book up-to-date.

"A knowledge of the principles of horseshoeing is indispensable to Veterinarians.

"The scholarship, ability and reputation of the translator is sufficient guarantee of the merit of this work which will be found of great value to the veterinarian and undoubtedly will meet with a cordial reception at the hands of both students and practitioners."—*American Jl. of Veterinary Medicine.*

J. B. LIPPINCOTT COMPANY

Publishers Philadelphia

discriminate against its citizens from one state from earning his living in another. The question is: Are those two men good moral citizens?

They are of the very best; never have they done anything to disgrace the profession. They go on about their business and do not bother any one. Never dealt in patent medicines, are strictly temperate, and are a credit to the profession.

What a great pleasure it would be if all veterinarians would get together and use their combined influence to rectify these miserable laws. A doctor graduating from a good school maintaining a three-year course should be entitled to earn his living in any state. If he is registered in one state that should be enough and not be held up for a consideration of money and then take a State Board examination in another state. It is a disgrace to the country. A legalized doctor in one state should be entitled to earn his living in any place where his country's flag flies.

The business is not worth all this bother. As to earn a living at the present day is a hard job, as there are so many pauper veterinary schools, why don't they give free schooling to physicians, lawyers and dentists. It shows you what political schemers can do. Get together and break those state laws for the benefit of the people.

W. P. Grimes, V. S.

Hawthorne, N. J.

Illmo Veterinary Medical Association Again

The new veterinary association in South Western Illinois and North Eastern Missouri will hold their next meeting on March 26th in the Council Chambers of the City Hall at Belleville, Illinois.

The meeting will be called to order at 10 a. m. A good program has already been promised and the Secretary, L. B. Michael, of Collinsville, Illinois, insistently urges every veterinarian within a reasonable distance of Belleville to attend this meeting.

The annual meeting of the Mississippi Valley Veterinary Association was held at Galesburg, Illinois, February 11th, 1914. Dr. W. E. Miller, Macomb, Illinois, is president and Dr. G. E. McIntyre, Alexis, Illinois, Secretary and Treasurer. A number of interesting papers, including the following, were presented: "Catarrh of the Nasal Sinuses," by Dr. W. J. Morgan; "Why We Lose Our Law Cases Against the Quacks," by Dr. C. G. Eckley; "Further Research on Parturient

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Eclampsia," by Dr. L. J. Brown. Other papers were also read by Drs. R. P. Frans, J. C. Brown, and E. H. Kinnett.

Dr. J. D. Murphy of Cambridge, Mass., died of pneumonia recently, at the age of sixty-two years.

Doctor Murphy was born in Ireland, and was a graduate of the Royal Veterinary College of London in 1871. He practiced for some years in his native country and came to the United States twenty-five years ago. He had at various times been veterinarian to the fire department of Cambridge and nearby cities.

Dr. C. C. Lipp, veterinarian for the South Dakota Agricultural Experiment Station, in a statement given the press, insists that the control of the hog cholera situation lies with the farmers themselves. He states that farmers of his state expect the Experiment Station to do a $5,000,000 job on a $5,000 appropriation, and says it is not unusual to receive a request for the receipt for making hog cholera serum from farmers who want to have it put up by local druggists.

Charles Orf, a dairyman of Tulsa, Oklahoma, has gone into the courts to prevent the city pure food and dairy inspector, Dr. C. R. Walters, from giving his cattle the tuberculin test.

MEMBERS AND VISITORS ATTENDING THE MISSOURI VALLEY VETERINARY ASSOCIATION, KANSAS CITY, JAN. 27th, 28th AND 29th, 1914.

Abarr, A. J., Clearfield, Iowa.
Abarr, R. D., Blockton, Iowa.
Anderson, J. S., Seward, Nebr.
Alford, S. W., Lincoln, Nebr.
Arnott, L. P., McPherson, Kans.
Asqueth, G. T., Farmington, Iowa.

Baker, G. G., Spencer, Iowa.
Baldwin, A. F., Creston, Iowa.
Barber, B. F., Fonda, Iowa.
Berg, E. W., Minneapolis, Minn.
Bourne, R. F., Kansas City, Mo.
Bowker, G. W., Van Horn, Iowa.
Bradley, Horace, Windsor, Mo.
Bradley, T. H., Lamar, Colo.
Brockelsby, W. R., Lawrence, Kans.
Brown, Ira C., Afton, Iowa.
Brown, L. D., Guthrie, Okla.
Bugbee, C. H., Kansas City, Mo.
Burns, G. T., Hepler, Kans.
Byerrum, R. O., Durant, Iowa.
Byrd, Atvill, Kansas City, Mo.
Baker, A. H., Chicago, Ill.

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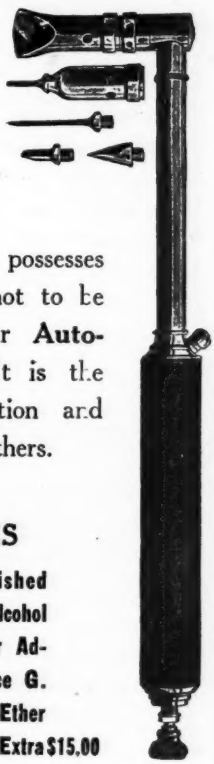
FIG. 1277



Our pattern possesses improvements not to be found in other **Auto-Cauteries.** It is the latest modification and superior to all others.

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Anti-Influenza Vaccine

The original **Beebe Anti-Influenza Vaccine,** of superior efficiency, has been paid the highest compliment by its several imitations now on the market.

It has proven its merits in the prevention and treatment of Influenza, Strangles and Shipping Fever—for which it is The Ideal Preparation.

Its success with others justifies your confidence.

July 25, 1913

Dr. W. L. Beebe,
St. Paul, Minn.

Dear Doctor:

Would advise you it gives me great pleasure to recommend your Influenza Vaccine to the veterinary profession at large. I have used it in a great many stables where influenza has made its appearance and the results I have attained have been very pleasing to my client and myself. I wish you the best of success with it, and cheerfully recommend it to every practicing veterinarian as a great asset to his business.

Thanking you, I remain,
D. J. Holton, V. S.,
Waseca, Minn.

Watch for the Recommendation of others

Recommended for use only by the Veterinary Profession.

PRICES

Single dose	**$0.50**
Four doses	**1.50**
Twelve doses	**4.00**

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Barbee, J. N., Talmage, Neb.
Baughman, D. E., Fort Dodge, Kans.
Bauman, S. H., Birmingham, Iowa.
Beattie, F. S., Iola, Kans.
Biart, E., Leavenworth, Kans.
Brown, F. F., Kansas City, Mo.
Brown, Lyman D., Hamilton, Mo.

Cahill, F. M., St. Joseph, Mo.
Carver, H. C., Higginsville, Mo.
Christian, T. T., Texarkana, Texas.
Conrad, B. W., Sabetha, Kans.
Coughlin, J. G., Edina, Mo.
Cozzens, F. S., State Center, Iowa.
Cress, L. L., Clinton, Mo.
Crumbaugh, A. J., Neosho, Mo.
Campbell, D. M., Chicago, Ill.
Carstenson, L. P., Columbus, Neb.
Connaway, J. W., Columbia, Mo.
Craig, William, Fillmore, Mo.
Caldwell, F. N., St. Joseph, Mo.

Dicke, E. L., Louisburg, Kans.
Dixon, James, Tipton, Iowa.
Dieling, N. J., Dallas Center, Iowa.
Dykstra, S. S., Manhattan, Kans.

Eisenhower, J. M., Schell City, Mo.
Edwards, F. H. P., Iowa City, Ia.

Flynn, J. C., Kansas City, Mo.
Freman, H. B., Rockwell City, Iowa.
Furnish, C. C., Hiawatha, Kans.

Gale, H. C., Clyde, Kans.
Gaines, L. C., Chilhowee, Mo.
Gallier, S. H., Norman, Okla.
Gibson, J. I., Des Moines, Iowa.
Gidley, R. E., Shenandoah, Iowa.
Glover, A. D., LaBelle, Mo.
Glover, E. K., Kansas City, Kans.
Goss, L. W., Manhattan, Kans.
Groome, H. R., Jewell, Kans.
Gain, J. H., Lincoln, Neb.
Gidley, Thos. W., Malvern, Iowa.
Guilfoil, W. J., Kansas City, Kans.

Hanna, J. H., Burlington, Iowa.
Hartronft, W. A., Hacksville, Kans.
Hazlet, S. X., Oelwein, Iowa.
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Hueben, Frank H., Kansas City, Kans.
Hueben, F. W., Kansas City, Kans.
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James, A. W., Cameron, Mo.
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Johnson, G. A., Sioux City, Iowa.
Johnston, Excelsior Springs, Mo.
Jorgensen, J. P., Elk Horn, Iowa.
Jungerman, G. F., Morrill, Kans.
Juckniess, P., Omaha, Neb.

Kaderbek, A., Fort Dodge, Iowa.
Kaylor, J. M., Barry, Ill.

Keehn, W. G., Kansas City, Mo.
Kinsley, A. T., Kansas City, Mo.
Kirkpatrick, J. I., Kansas City, Kans.
Knisely, D. O., Topeka, Kans.
Kelso, R. F., Corydon, Iowa.
King, W. T., Olathe, Kans.
Klusmire, F. W., So. Omaha, Neb.
Kulp, A. I., Adel, Iowa.

Lacroix, J. V., Kansas City, Mo.
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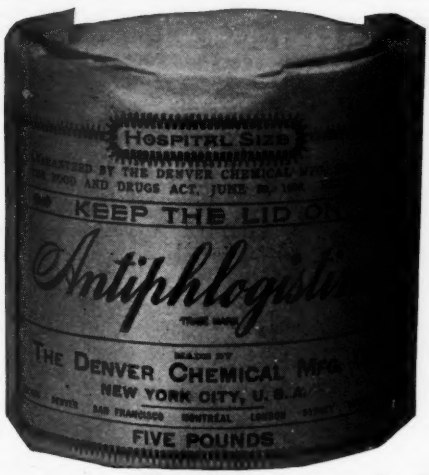

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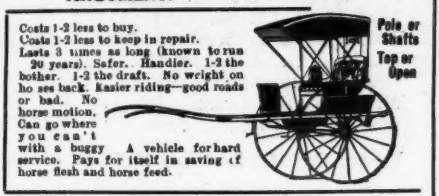

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THIS WORK CONTAINS AMONG OTHERS THE FOLLOWING:

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The Use of the Stomach Tube in Indigestion and Colic of the Horse, by D. O. Knisely, Topeka, Kansas. This is the most comprehensive article ever written on the use of the stomach tube. It gives fully, yet concisely, the indications for its use, the whole technic of stomach lavage, the results and the after-treatment. Doctor Knisely has had twenty years' continuous experience in veterinary practice, he is at the head of a firm that enjoys a large and profitable practice and, personally, has passed the stomach tube more than four thousand times and has held an autopsy on every one of these four thousand that failed to recover. He shows how colics of the horse may be treated with a large measure of success at an average cost for medicine of less than 25 cents per case.

The Surgical Treatment of Colics, by Dr. L. A. Merillat, professor of surgery in the McKillip Veterinary College. Little need be said of this article, a part of it has been published in recent issues of VETERINARY MEDICINE, and the reader can judge of its great practicability for himself. It should be said, however, that in the book the article is somewhat more complete than in VETERINARY MEDICINE, the *modus operandi* in particular being much more fully given. Doctor Merillat's enormous experience, during a period of twenty-five years in practice in Chicago, entitles him to speak with authority on this subject. His many years of teaching in the Chicago Veterinary College and in the school with which he is now affiliated have enabled him to present this subject in a way to be grasped with the least effort on the part of the reader.

Impaction of the Cecum, by Dr. A. T. Gilyard, Waterbury, Connecticut. This short article describes clearly a type of intestinal ailment that is rather rare in horses, and is usually diagnosed only upon postmortem examination. A treatment is suggested that would appear to give fair promise of recovery. The article has received the highest encomiums from those qualified to pass judgment on a matter of this nature.

The Medicinal Treatment of Colics, by Dr. E. L. Quitman, professor of Materia Medica and Therapeutics in the Chicago Veterinary College. This is a companion article to Doctor Merillat's on the surgical treatment of colics, and like Doctor Merillat's gives importance to the matter of diagnosis. No one acquainted with Doctor Quitman (and few veterinarians are more widely known) and having a knowledge of his close application to therapeutics, his wide experience in veterinary practice during a period of more than twenty years, his optimistic faith in drugs and his great skill in their use will need to be told that this article possesses great value for the practitioner. It was prepared especially for this work and is not obtainable in any other publication.

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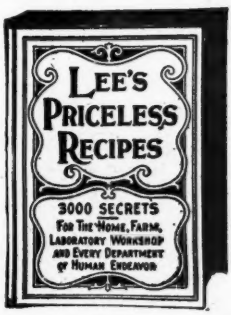

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This shows the universality of the disease. Kansas and Nebraska bore the brunt of the affliction during the past year but other states have also suffered seriously. Kansas has had more than her share. Severe outbreaks extended over almost the entire state in 1891 and since that date have recurred with equal severity on two occasions in various portions of the State.

The bulletin takes notice of the fact that additional deaths have undoubtedly been due to the use of fake "cures" sold by unscrupulous persons. It is reported that in Nebraska "blackleg vaccine" was used on at least 1,600 unaffected horses, nearly 1,500 of which are said to have died as a direct result.

Investigators have practically established that this horse disease can be controlled effectively only by a total change of feed and forage. It is quite obvious that there is a direct connection between the green forage, exposed pasturage and newly-cut hay or fodder which the horses eat, and this Cerebro-spinal meningitis, as the disease is known to scientists. In fact, eating of such forage when contaminated is undoubtedly the most important cause. Over 95 per cent of cases of this disease in Kansas and Nebraska during the outbreak of 1912 were maintained under such conditions.

Great care must be taken that horses do not obtain the dangerous forage unknown to their owners. The owner of one farm informed the Department's investigator that his dead horses had eaten nothing but old hay and grain.

"But what about the closely-cropped grass in this pasture?" remarked the investigator, noticing the adjacent field.

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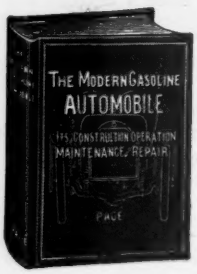

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American Journal of Veterinary Medicine 1761 Lawrence Ave. CHICAGO, ILL.

"Oh!" answered the farmer innocently, "I always turn the work-horses into pasture over night."

Many horses have died from blind staggers caused by eating moldy baled hay. As soon as the hay was eliminated the disease ceased. Other horses in the vicinity not fed upon this hay failed to contract this disease. Later some of the moldy bales were opened and exposed to the sun for three or four weeks. After this the hay was fed to horses without producing any ill effect. Forage poisoning, therefore, seems not to be an infection, but rather what is called "auto-intoxication"—that is, it is due to certain chemical poisons or toxins formed by the activity of internal organisms. These poisons may be present when the forage is taken into the body or may be formed in the stomach. The nature of this poison is still unknown.

Characteristic Symptoms of This Disease.

When the horse is taken with the blind staggers it usually exhibits a disturbance of the appetite, depression and weakness, while there is trouble in swallowing, drooping of the head and sleepiness which may give way to excitement and attacks of dizziness. The vision is impaired, which results in the staggering gait that gives the disease its popular name. Certain muscles of the neck and flanks are cramped and there is a grinding of the teeth. Sometimes the animal has pains as though it were afflicted with colic. The animal will walk strangely if in an open space and will try to push through an obstacle it encounters. In the stable he will press his head against the stall or rest it on the manger. Sometimes he will crowd into a corner. The temperature at the beginning of the disease ranges from 103 to 107 degrees F., but within 24 hours the temperature falls and eventually becomes subnormal. The animal is often down on the second or third day and may or may not get up when urged. Death usually occurs in from four to eight days, although death may follow within ten hours of the first

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symptoms, while chronic cases have been known to last for three weeks. About 90 per cent of the affected animals die.

Medical Treatment Generally Unsatisfactory.

While medical treatment in the vast majority of cases has not brought results, nevertheless if it is used at all it must be prompt and before the disease has had time to run. The digestive tract should be cleaned out thoroughly at once. Active and concentrated remedies should be given. Afflicted animals, however, have great difficulty in swallowing immediately after being taken, so that these remedies must generally be given by injection. Arecoline is one-half grain doses, subcutaneously, has given good results as a purgative. Early in the disease urotropin in doses of 25 grains dissolved in water and given by the mouth every 2 hours, appears to have been responsible for the recovery of some cases of the malady.

After the animal has been purged, the treatment varies according to the symptoms. The following measures have been recommended:

The first and most important: Feed only clean, well-cured forage and grain, and pure water.

Calomel, salol, and salicylic acid, to disinfect intestines.

Mild antiseptic mouth-washes are advisable.

Copious cold-water injections, if the temperature is high, give better results than antipyretics.

An ice pack applied to the head is beneficial in the case of marked nervous disorder.

One-ounce doses of chloral hydrate per rectum should be given if the patient is violent or muscular spasms are severe.

If the temperature becomes sub-normal, the animal should be warmly blanketed.

If much weakness is shown this should be combated with stimulants, such as strychnine, camphor, alcohol, atropine, or aromatic spirits of ammonia.

During convalescence the usual tonic treatment is recommended.

The Department of Agriculture's bulletin (No. 65) is entitled "Cerebrospinal Meningitis (Forage Poisoning)" and may be had on application to the Department of Agriculture, Washington, D. C.

Dr. R. E. McBroom of Wells, Minn., was killed January 15th in an automobile accident. Doctor McBroom was a graduate of the Kansas City Veterinary College and had been located in Wells since his graduation in 1907.

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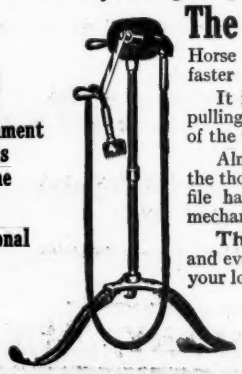

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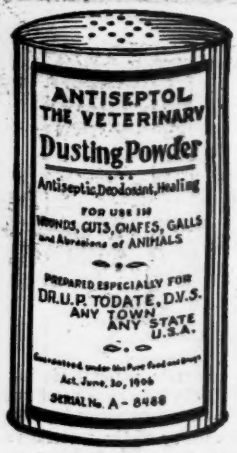

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